

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

**Regional Geochemical Results from the Analyses of Rock, Water, Soil, Stream
Sediment, and Vegetation Samples--Fortymile River
Watershed, East-Central, Alaska**

by

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INTRODUCTION

This report describes and presents geochemical and biogeochemical data for a cooperative study in the Fortymile Mining District, east central Alaska. This study is being funded by the U.S. Geological Survey (USGS) Mineral Resources Program through Fiscal Year 1999. Cooperative funds are being provided from various State of Alaska sources through the Alaska Department of Natural Resources. Results presented here are for the first field season completed in June 1997. The study's second field season was completed in June 1998.

Primary objectives of this study are:

- Determine the regional baseline geochemistry (waters, soils, rocks, sediments, and selected terrestrial vegetation) for a section of the Fortymile River watershed currently being mined for placer gold (suction dredge and "cat" or dozer operations).
- Determine mine discharge geochemical fluxes.
- Determine regional watershed geochemical fluxes.
- Assess the influence of geology on water-rock signatures, and using these signatures, try to differentiate sources of surface and hyporheic water (shallow groundwater near a streambed).
- Determine the movement of metals through ecosystems of specific interest, such as permafrost muskeg terrain, upland alluvial forests; and riverine floodplain shrub systems.
- Using both a geologic and a hydrologic framework, define the relative contribution of the various natural sources of arsenic and other environmentally important metals to the landscape.
- Assist the State of Alaska and the U.S. Environmental Protection Agency (USEPA) in the arsenic risk-assessment process.

Background

The USGS and the Alaska Department of Natural Resources (AKDNR) are investigating the environmental geochemistry of a portion of the Fortymile River watershed (Figure 1). The management of the region and its resources is complex due to diverse ownership and the many land-use options. In 1980, the Fortymile River and its major tributaries were designated a Wild and Scenic Corridor by the Alaska National Interest Lands Conservation Act (ANILCA). Jurisdiction of the land bordering the watershed continued to be the responsibility of the U.S. Bureau of Land Management (USBLM). The AK-DNR has jurisdiction over the management of the river's recreation (rafting, canoeing, and fishing) and mining. The USEPA is also involved because mining discharges require compliance with the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act. Finally, both sport and subsistence hunting are important in the region and are managed by several Federal and State agencies.

Placer gold was first discovered in the Fortymile River Mining District in 1886 and has been mined there ever since. Yeend (1996) provides a summary of the gold mining history of the placers of the Fortymile River region. Historically from 1886 to 1995, the Fortymile River region has produced about 16,640 Kg (534,974 oz) of gold (Swainbank and others, 1998). Along the North Fork of the Fortymile River, and just above its confluence with the South Fork, mining is currently limited to a small number of suction dredges which when combined, produce only a few hundred ounces of gold per year. These operations utilize mostly eight- or ten-inch suction hoses and focus on the recovery of gold from the within-stream bottom sediments. The suction dredge removes the river bottom material,

usually down to bedrock, and passes it through floating sluice boxes at the water's surface (Yeend, 1996). This process saves the dense sediment and cobble fraction while re-depositing less dense material back into the stream.

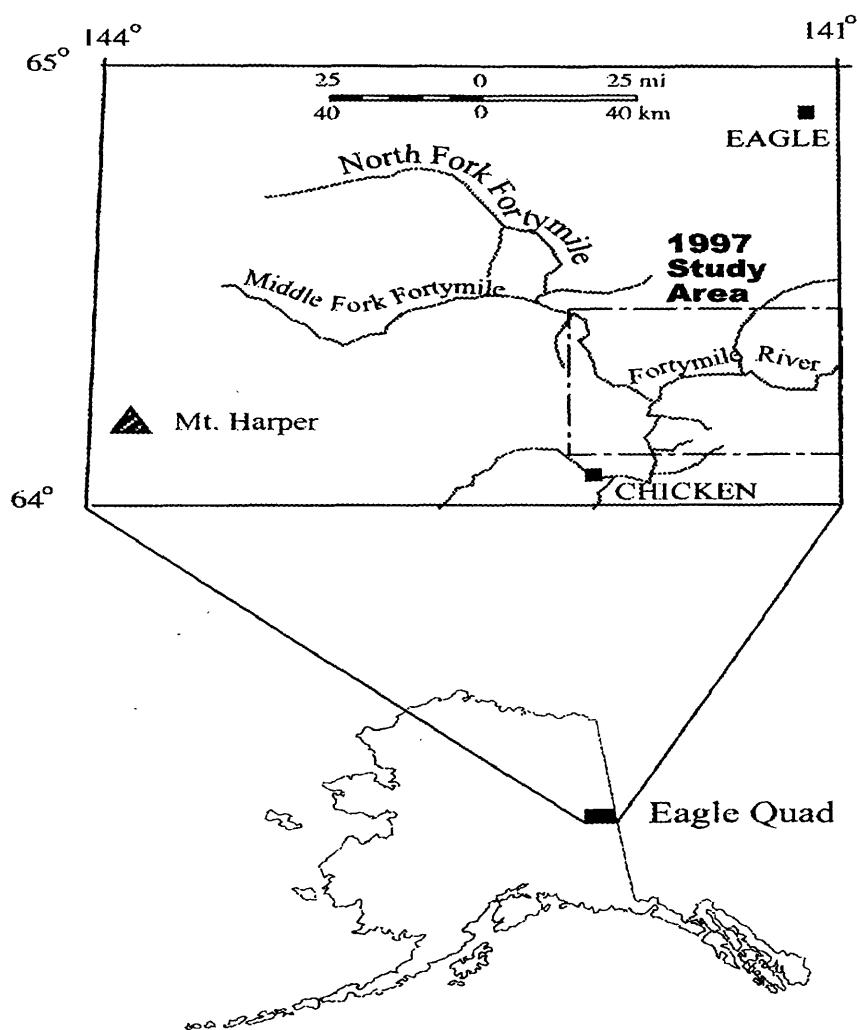


Figure 1. Location of the Fortymile River study area, east-central Alaska

In this area, mining activities may: (1) increase the turbidity of the river water, (2) adversely impact the overall chemical quality of the river water, and (3) increase the level of specific toxic elements, such as arsenic, copper, lead, cadmium, and zinc, in the river. A cooperative effort between the USGS and the AK-DNR was initiated in 1997 to provide data to address these concerns, as well as to establish regional baseline geochemical and biogeochemical data (Gough and others, 1997; Wanty and others, 1997). In June 1997, field measurements were made for pH, turbidity, electrical conductivity (an estimation of the total dissolved concentrations of mineral salts), and stream discharge for the Fortymile River and many of its tributaries. At the

same time, samples of soils, rocks, stream sediments, water, and vegetation were collected for chemical analysis, and sent to the USGS laboratories in Denver, Colorado. This report lists the analytical results of the 1997 sampling.

Environmental Concerns

Concern has been raised that the dredge operations may be increasing the metal load and turbidity of the Fortymile River while decreasing the number and diversity of aquatic biota. Whereas dredge operations re-suspend the bottom sediment, the magnitude of this disturbance on stream metal loading is unknown, as is its possible impact on stream biota. Furthermore, it is unknown what effect the dredge operations may have on the transport and redistribution of metals—some of which (for example, arsenic, copper, and zinc) have environmental importance. State and Federal regulations require that the degree of adverse impact, if any, be quantified. The USGS and the Alaska Department of Natural Resources are cooperating in this project in order to provide the scientific data for upcoming decisions that involve State and Federal land-use options and their regulations.

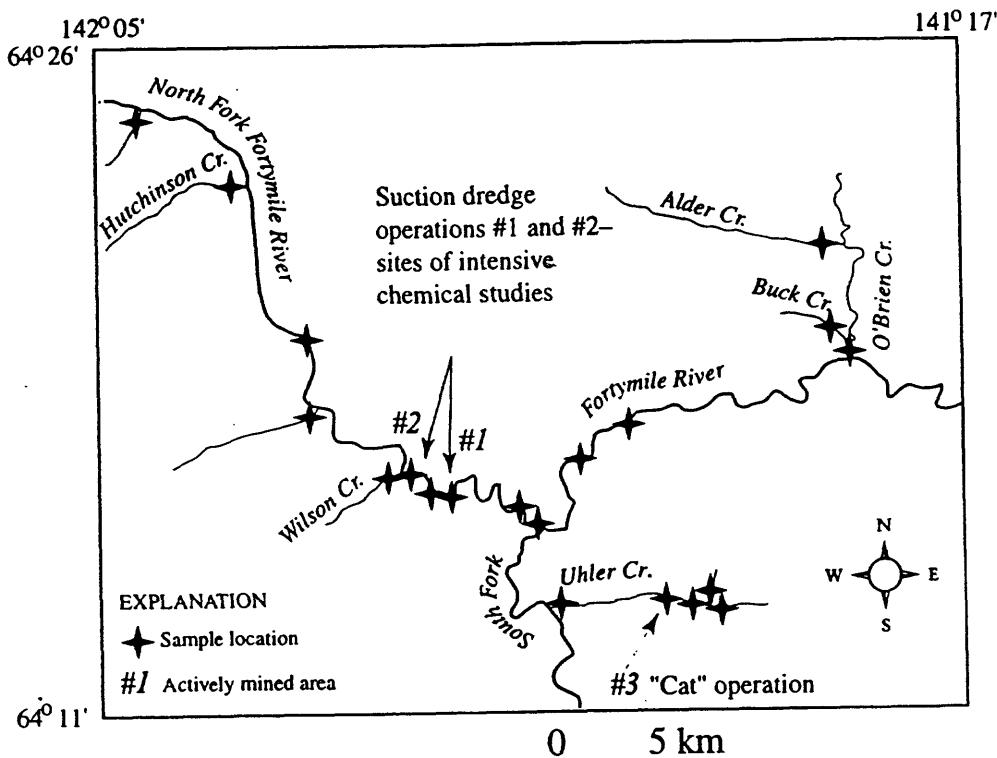


Figure 2. Location map of the Fortymile River study area with stream and regional geochemistry sampling sites. Selected placer mining operations at or near study sites are shown.

Placer dredge operations must meet certain minimum operational criteria in order to receive State mining permits. Permitting is based on use of approved mining methods, camp placement and structure, and discharge to the river of mining wastes. In November 1996, the State of Alaska and USEPA released the new NPDES discharge guidelines under a General

Permit (GP) for all placer mining. The blanket discharge rules differ somewhat depending on the size of the operation, but contain, among other things, a temporary waiver to the proposed USEPA drinking water standard for arsenic (0.18 micrograms per liter). A recently negotiated agreement between the USEPA and several special-interest groups mandates that monitoring be conducted of the “fourteen toxic metals found most frequently in Alaska placer mine effluent(s).” Further, permits require the measurement of “natural background” levels for turbidity and metals. The State of Alaska and USEPA will use information from this study to refine the language of future GPs and to establish the methods and protocols used to evaluate compliance to the GP.

The “fourteen toxic metals” targeted for monitoring by the negotiated agreement are Al, Sb, As, Ca, Cu, Cr, Cd, Mg, Hg, Ni, Pb, Se, Ag, and Zn. Arsenic is of particular concern because anomalously high surface concentrations have been found in soil, sediment, and surface water during the preparation of Environmental Impact Statements for the region.

Arsenic migration is limited by high levels of sulfide in reducing environments and by its tendency to sorb onto clays, hydroxides, and organic matter. The source of the arsenic in the Fortymile watershed is geologic (as opposed to anthropogenic) and is known to be associated with sulfides (especially arsenopyrite) in both the metasediments and metavolcanics of Paleozoic age, as well as younger intrusive igneous bodies. Other than sulfide oxidation, it is unknown how arsenic is mobilized, how much of an impact suction dredge placer mining techniques may accentuate arsenic transport, and whether the presence of arsenic poses a threat to aquatic life, wildlife, or humans.

Important to this study’s assessment will be the evaluation of the flux and biogeochemical cycling of arsenic between the terrestrial and aquatic phases. In addition to studying water-rock processes that mobilize arsenic, this project is also examining other factors that affect arsenic bioavailability to the environment (for example, in sites that are mined versus unmined; vegetated versus barren; saturated (permafrost) versus drained; forested versus muskeg).

Geologic and Hydrologic Setting

Bedrock and alluvium control the minerals and chemical elements available to enter the hydrologic and biologic systems. Therefore, understanding the geologic framework of the area is the first step in assessing the effect of suction dredge operations on the Fortymile River. One of the goals of this project is to chemically characterize the bedrock of the area in order to understand its role in determining the composition of the river and stream waters, which flow across it. These waters, in turn, flow into the Fortymile River drainage and form the “background” necessary to evaluate the effect of the dredge operations on the water chemistry and turbidity.

The bedrock of the Fortymile Mining District is made up of volcanic and sedimentary rocks of Paleozoic age that have been intruded by younger granitic rocks (Day and others, 1999; Dusel-Bacon and others, 1995; Foster and Keith, 1969; Foster and others, 1994). The volcanic rocks were originally basalt similar to that formed in modern marine environments. The original sedimentary rocks were variable in composition and are also similar to those

seen in modern marine environments. This entire package of rocks experienced regional mountain-building event(s) during Jurassic time in which the rocks were metamorphosed, deformed, and invaded by granite. The regional tectonic mountain-building event(s) caused several periods of folding of the rocks, the latest of which produced regional north-northeast oriented anticlines and synclines (Day and others, 1999; Gough and others, 1997; Yeend, 1996).

Recent geologic mapping has outlined several distinct types of alluvial deposits that range in age from Tertiary to Recent. During the Tertiary Epoch, numerous benches were cut into the bedrock by the forces of erosion. These benches have Tertiary-to Quaternary-age gravel deposits upon them, which locally host placer gold (Yeend, 1996; Gough and others, 1997). Along the banks of the Fortymile River, Quaternary alluvial gravel, sand, and silt deposits have been the main source of the placer gold mined to date and are the principal target for the dredge mining operations along the river.

The Fortymile River drains mostly subarctic forest and muskeg with discontinuous permafrost (Figure 1). Even the regions that are not underlain by permafrost are commonly frozen to within several tens of centimeters below the surface. Discharge is highly variable (Figure 3) and reflects (1) a rapid spring ice-break-up period (April), (2) runoff from storm events (the frozen nature of the terrain accentuates the runoff potential), (3) periodic summer dry periods, and (4) freeze-up (October). There is usually some flow on the mainstem in mid-winter from ground water sources. On April 2, 1998, we measured several springs along the North Fork that were discharging at about 0.17 cfs, whereas during that same period total flow (measured just above the confluence with the South Fork) was between 21 and 27 cfs. Breakup at the Fortymile Bridge (16 miles below the confluence) did not occur until the end of April 1998. The rivers and streams of this region are dark in color due to dissolved organic matter ("black-water rivers"). The water is, however, low in conductivity, has pH values that are commonly above 7.3, and turbidity values that seldom exceed 2 ntu (Table 3).

STUDY METHODS

Study Design and Sample Collection

Field sampling was conducted between June 20-29, 1997. All sites where water, rock, soil, stream sediment, and vegetation material were collected were located on 1:63,360-scale topographic maps, GPS coordinates recorded, and photographs taken.

Geology

In order to meet the objectives of this study, a structural geologic basemap is being compiled. This effort is an extension of the work of Foster and Keith (1969), Foster and others (1994), and Dusel-Bacon and others (1995). This study is a more detailed structural investigation of the area (Day and others, 1999). Extensive vegetative cover in the Yukon-Tanana Uplands makes outcrop examination difficult; however, both helicopter and river boat support allowed access to ridges, roadcuts, and stream banks and channels. Rock samples were collected for geochemical, thin-section, and petrographic analysis. The rock-sampling program was designed to address two specific issues: 1) the need to characterize regional lithologic units that underlie the study area; and 2) the need to characterize any possible mineralized and (or) altered zones that might occur in the study area. Sample

sites and sample descriptions are listed in Table 4, and analytical results are listed in Tables 8, 9, and 10. Samples from regional lithologic units were collected at sites thought to best typify the unit being examined. In order to minimize small-scale compositional variations, three to five separate pieces of the rock were collected over a surface exposure of approximately twenty-five square meters. Similarly, altered and (or) mineralized rock samples also consist of multiple pieces of material, but the size of the area sampled was often more restricted due to the smaller size of the altered and (or) mineralized zone.

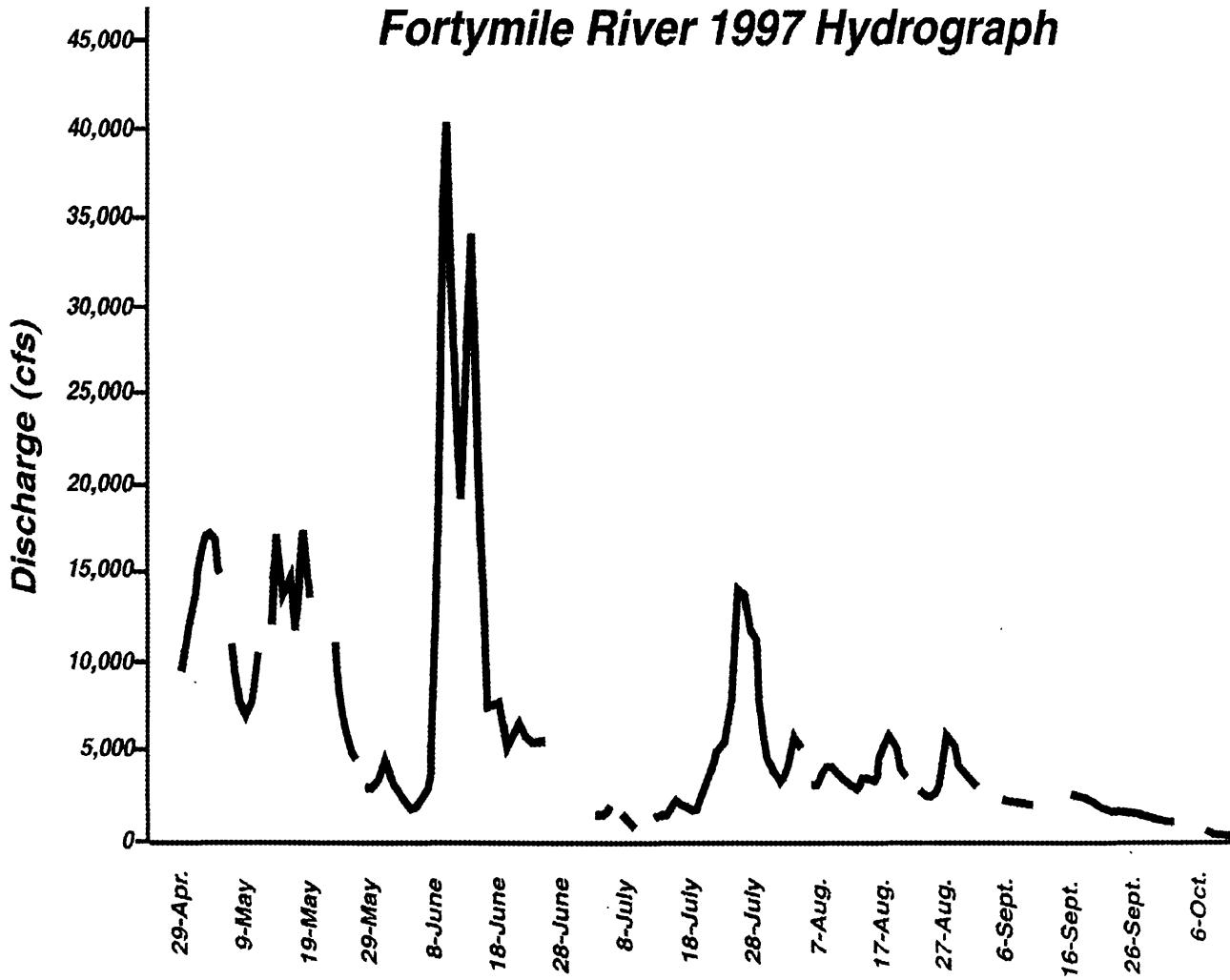


Figure 3. Hydrograph for the mainstem of the Fortymile River at the Fortymile Bridge on the Taylor Highway, 1997 (cfs, cubic feet per second; data courtesy of the Bureau of Land Management and June Taylor).

Hydrology

The hydrology and hydrogeochemistry of the region is being constructed through the examination of integrated flow and chemistry measurements and analyses of the mainstem of the Fortymile River and its tributaries (Figure 2). Tributaries were selected for study based on (1) watershed area, (2) geologic terrain, (3) results of past geochemical sampling (Foster and Clark, 1970),

(4) results of a reanalysis of archived NURE (National Uranium Resource Evaluation) samples (Hoffman and Buttleman, 1996), and (4) current and past mining activity. Tributaries draining watersheds that met these criteria were then sampled just above their confluence with the Forty-mile River. The Uhler Creek watershed was sampled at five locations in order to assess past and present "cat"-mining influences. In addition to the regional assessment, the study seeks to (1) characterize the geochemistry of the discharge from selected suction dredge operations (Wanty, and others, 1997) and (2) assess the importance of ground water discharge (hyporheic waters) to the overall chemistry of the Forty-mile River. The location, description, and geochemistry of water samples are given in Tables 3, 6, and 7. Also listed in Table 2a and 2b are the references for water sampling protocols used in the study.

Soils, vegetation, and stream sediments

The collection of soils, vegetation, and stream sediments was based on the geologic and hydrologic framework being constructed. Corresponding water samples were collected from soil, vegetation, and stream sediment sites. Tables 5, 11, 12, 13, and 14 list the location, description, and analytical results of soil and vegetation samples. Soil and vegetation sampling locations were upslope of the area in the stream where the hydrogeochemical parameters were measured. Selection of the area was based on geology, aspect (south-exposures being preferred), and vegetation community and were usually less than 10 vertical meters above the stream. Vegetation and soil sites were upland conifer stands, usually dominated by white spruce and birch, with an understory of mixed shrubs and a dense ground cover of mosses and scattered lichens. Obvious floodplain and debris flow areas were avoided. Soil pits were dug to the C-horizon or to a depth dictated by the presence of frozen ground. At each site, approximately 1 kg of Oa (surficial organic layer), A1-, B-, and C-horizons were collected from the pits and placed in soil-sample paper bags. Vegetation samples (approximately 200 g, dry weight) consisted of the leaf and stem material of the young, growing branches (approximately the terminal-most 10-cm) of *Salix glauca* (grayleaf willow) and *Alnus crispa* (green alder). Samples are a composite of the branches from several small individuals in the immediate vicinity of the soil pit. The material was clipped using stainless steel shears, placed in Hubco bags, and labeled. In addition, a large, integrated sample of the ubiquitous feather moss (*Hylocomium splendens*) was also collected. To help assess the local variability, at four sites duplicate stream sediment, soil, and vegetation samples were collected. In the following data tables, these site duplicate samples are designated with a "X" as a suffix to the sample number. The soil and vegetation samples will be used to assess regional biogeochemical trends as well as the biogeochemical cycling of metals through the subarctic, boreal forest ecosystem.

Stream sediment samples were collected at most of the hydrogeochemical sampling sites (Table 5) and the analytical results for these samples are presented in Table 15.

Miscellaneous samples

A pyrite concentrate sample was collected from the suction dredge concentrate of the dredge operated by Larry Taylor on the Forty-mile River. The analytical results are presented in Table 16. There is good agreement between the results of the different methods and laboratories.

Sample Preparation and Analysis

All samples were shipped to the Denver Laboratories of the USGS for analysis. Methods of sample storage, shipping, preservation, drying, preparation for analysis, and analysis are described elsewhere and follow the procedures outlined in Crock and others (1993), Arbogast (1996), Lichte and others (1986), and Gough and Crock (1997). Table 1a lists the concentration ranges for major-element-oxide analysis in rocks by wavelength dispersive x-ray fluorescence spectrometry. Tables 1b and 1c lists the lower limits of determination (LLD) for the other methods used in the analyses of the solid samples. Tables 2a and 2b list the LLD's for both field and laboratory methods used for the analyses of the water samples. The vegetation and soil samples were ashed prior to the determination of most elements. The data as measured on the samples of vegetation ash and soil ash and raw material are given in Tables 17 (soils), 18 (green alder and grayleaf willow), and 19 (feather moss).

ANALYTICAL RESULTS

The tables in this report list all chemical analysis results for the samples of water, rock, soil, stream sediment, and vegetation collected in 1997 at the Fortymile River study area. The purpose of this report is the release of these data and the report is not meant to be interpretative. Due to convention, many of the analyses for soils and vegetation have been converted from a measured ash-weight basis to a dry-weight basis. All data as measured are also presented in Tables 17 -19 for those media where the measured data were converted from an ash-weight basis to a dry weight basis. Except for the determination of Au in rock and soil samples (Tables 10, 11, and 12) by graphite furnace-atomic absorption spectrometry, all analytical results reported herein were performed at the Denver, Colorado laboratories of the USGS. National Institute of Standards and Technology (NIST) and internal USGS reference materials and laboratory-made duplicate sample (designated in the data tables with a suffix of "Z" to the sample number) were submitted to the laboratories as part of each suite of samples. The results are presented for the duplicate samples in the respective data tables. Quality assurance (QA) and control (QC) practices, for most of the analysis methods used, are provided in more detail in Arbogast (1996).

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REFERENCES

- Arbogast, B.F., ed., 1996, Analytical methods manual for the Mineral Resource Surveys Program, U.S. Geological Survey: U.S. Geological Survey Open-File Report 96-525, 248 p.

- Crock, J.G., Beck, K.A., Fey, D.L., Hageman, P.L., Papp, C.S., and Peacock, T.R., 1993, Element concentrations and baselines for moss, lichen, spruce, and surface soils, in and near Wrangell-Saint Elias National Park and Preserve, Alaska: U.S. Geological Survey Open-File Report 93-14, 98 p.
- Curry, K.J., 1996, Total sulfur by combustion, *in* Arbogast, B.F., ed., 1996, Analytical methods manual for the Mineral Resource Surveys Program, U.S. Geological Survey: U.S. Geological Survey Open-File Report 96-525, p. 177-181.
- Day, W.C., Gamble, B.M., and Henning, M.W., 1999, Geologic setting of the Fortymile River Area—Polyphase deformational history within part of the Eastern Yukon-Tanana Uplands of Alaska, *in* Kelley, K.D. and Gough, L.P., eds., Geologic studies in Alaska by the U.S. Geological Survey, 1997: U.S. Geological Survey Professional Paper, in press, 35 p.
- Dusel-Bacon, C., Hansen, V.L., and Scala, J.A., 1995, High-pressure amphibolite facies dynamic metamorphism and the Mesozoic tectonic evolution of an ancient continental margin, east central Alaska: Journal of Metamorphic Geology, v. 13, p. 9-24.
- Fishman, M.J., and Friedman, L.C., eds., 1989, Methods for determination of inorganic substances in water and fluvial sediments: Chapter A1, Book 5, Laboratory analysis, Techniques of Water-Resources Investigations of the United States Geological Survey, 545 p.
- Fishman, M. J., and Pyen, G., 1979, Determination of selected anions in water by ion chromatography: U.S. Geological Survey Water-Resources Investigations Report 79-101, 30 p.
- Foster, H.L., 1976, Geologic map of the Eagle quadrangle, Alaska: U.S. Geological Survey Miscellaneous Investigations Series Map I-922.
- Foster, H.L., and Keith, T.E.C., 1969, Geology along the Taylor Highway, Alaska: U.S. Geological Survey Bulletin 1281, 36 p.
- Foster, H.L., and Clark, S.H.B., 1970, Geochemical and geologic reconnaissance of a part of the Fortymile Area, Alaska: U.S. Geological Survey Bulletin 1312-M, 29 p.
- Foster, H.L., Keith, T.E.C., and Menzie, W.D., 1994, Geology of the Yukon-Tanana area of east-central Alaska, *in* Plafker, G., and Berg, H.C., eds., The geology of Alaska: Boulder, Colo., The Geological Society of America, p. 205-240.
- Gough, L.P., Day, W.C., Crock, J.G., Gamble, B.M., and Henning, M., 1997, Placer gold mining in Alaska—cooperative studies on the effect of suction dredge operations on the Fortymile River: U.S. Geological Survey Fact Sheet FS-155-97, 4 p.
- Gough, L.P. and Crock, J.G., 1997, Distinguishing between natural geologic and anthropogenic trace element sources, Denali National Park and Preserve, *in*

Dumoulin, J.A. and Gray, J.E., eds., Geologic Studies in Alaska by the U.S. Geological Survey, 1995: U.S. Geological Survey Professional Paper 1574, p. 57-71.

Hoffman, J.D. and Buttleman, K., 1996, National Geochemical Data Base—National Uranium Resource Evaluation (NURE) hydrogeochemical and stream sediment reconnaissance (HSSR) data for Alaska and the conterminous United States: U.S. Geological Survey Digital Data Series DDS-18-B (CD ROM).

Lichte, F.E., Meier, A.L., and Crock, J.G., 1986, Determination of the rare earth elements in geological materials by inductively coupled plasma mass spectrometry: Analytical Chemistry, 59, p. 1150-1157.

Mee, S.J., Siems, D.F., and Taggart, J.E., Jr., 1996, Major element analysis by wavelength dispersive X-ray fluorescence spectrometry, *in* Arbogast, B.F., ed., 1996, Analytical methods manual for the Mineral Resource Surveys Program, U.S. Geological Survey: U.S. Geological Survey Open-File Report 96-525, p. 236-242.

O'Leary, R.M., Hageman, P.L., and Crock, J.G., 1996, Mercury in water, geologic, and plant materials by continuous flow-cold vapor-atomic absorption spectrometry, *in* Arbogast, B.F., ed., 1996, Analytical methods manual for the Mineral Resource Surveys Program, U.S. Geological Survey: U.S. Geological Survey Open-File Report 96-525, p. 42-55.

O'Leary, R.M. Meier, A.L., 1996, Gold by flame or graphite furnace atomic absorption spectrometry, *in* Arbogast, B.F., ed., 1996, Analytical methods manual for the Mineral Resource Surveys Program, U.S. Geological Survey: U.S. Geological Survey Open-File Report 96-525, p. 31-36.

Swainbank, R.C., Clautice, K.H., and Nauman, J.L., 1998, Alaska's Mineral Industry – 1997: Alaska Department of Natural Resources Division of Geological And Geophysical Surveys Special Report 52, 65 p.

Wanty, R.B., Wang, B., and Vohden, J., 1997, Studies of suction dredge gold-placer mining operations along the Forty-mile River, eastern Alaska: U.S. Geological Survey Fact Sheet 154-97.

Yeend, W., 1996, Gold placers of the historical Forty-mile River region, Alaska: U.S. Geological Survey Bulletin 2125, 75 p.

Table 1a. Concentration ranges for major element oxide analyses of rocks wavelength dispersive X-ray fluorescence spectrometry.

Element	Concentration range (percent) *
SiO ₂	0.10 - 99.0
Al ₂ O ₃	0.10 - 58.0
Fe ₂ O ₃	0.04 - 28.0
MgO	0.10 - 60.0
CaO	0.02 - 60.0
Na ₂ O	0.15 - 30.0
K ₂ O	0.02 - 30.0
TiO ₂	0.02 - 10.0
P ₂ O ₅	0.05 - 50.0
MnO	0.01 - 15.0
LOI (925C) **	0.01 - 100.0

* Mee and others (1996)

** Loss on ignition at 925C.

Table 1b. Lower limits of determination for elemental analyses of solid samples
by inductively coupled plasma - mass spectrometry.
(A.L. Meier, 1998, unpublished data.)

Element	Rock		Sediment	Soil Ash	Plant Ash
	Acid Digest	Sinter Digest	Acid Digest	Acid Digest	Acid Digest
Ag, ppm	0.02	--	0.02	0.02	0.02
Al, %	0.01	--	0.01	0.01	0.01
As, ppm	0.5	--	0.5	0.5	0.5
Ba, ppm	5	10	5	5	5
Be, ppm	0.1	--	0.1	0.1	0.1
Bi, ppm	0.05	--	0.05	0.05	0.05
Ca, %	0.5	--	0.5	0.5	0.5
Cd, ppm	0.1	--	0.1	0.1	0.1
Ce, ppm	0.1	0.3	0.1	0.1	0.1
Co, ppm	0.5	--	0.5	0.5	0.5
Cr, ppm	1	2	1	1	1
Cs, ppm	0.1	--	0.1	0.1	0.1
Cu, ppm	1	--	1	1	1
Dy, ppm	--	0.05	--	--	--
Er, ppm	--	0.05	--	--	--
Eu, ppm	--	0.01	--	--	--
Fe, %	0.05	--	0.05	0.05	0.05
Ga, ppm	0.1	--	0.1	0.1	0.1
Gd, ppm	--	0.05	--	--	--
Ge, ppm	0.1	--	0.1	0.1	0.1
Hf, ppm	--	0.5	--	--	--
Ho, ppm	--	0.02	--	--	--
In, ppm	0.1	--	0.1	0.1	0.1
K, %	0.5	--	0.5	0.5	0.5
La, ppm	0.1	0.3	0.1	0.1	0.1
Li, ppm	0.5	--	0.5	0.5	0.5
Mg, %	0.1	--	0.1	0.1	0.1
Mn, ppm	10	--	10	10	10
Mo, ppm	0.1	0.3	0.1	0.1	0.1
Na, %	0.01	--	0.01	0.01	0.01
Nb, ppm	0.1	0.3	0.1	0.1	0.1
Nd, ppm	--	0.3	--	--	--
Ni, ppm	1	--	1	1	1
P, %	0.1	--	0.1	0.1	0.1
Pb, ppm	0.1	--	0.1	0.1	0.1
Pr, ppm	--	0.3	--	--	--
Rb, ppm	1	3	1	1	1
Re, ppm	--	0.05	--	--	--

Table 1b. Lower limits of determination for elemental analyses of solid samples by inductively coupled plasma - mass spectrometry (continued).

Element	Rock		Sediment	Soil Ash	Plant Ash
	Acid Digest	Sinter Digest	Acid Digest	Acid Digest	Acid Digest
Sb, ppm	0.1	--	0.1	0.1	0.1
Sc, ppm	0.5	2	0.5	0.5	0.5
Sm, ppm	--	0.05	--	--	--
Sn, ppm	--	0.5	--	--	--
Sr, ppm	10	20	10	10	10
Ta, ppm	--	0.2	--	--	--
Tb, ppm	--	0.005	--	--	--
Th, ppm	0.05	--	0.05	0.05	0.05
Ti, %	--	0.01	--	--	--
Tl, ppm	0.1	--	0.1	0.1	0.1
Tm, ppm	--	0.01	--	--	--
U, ppm	0.05	--	0.05	0.05	0.05
V, ppm	1	--	1	1	1
W, ppm	--	0.1	--	--	--
Y, ppm	0.1	0.1	0.1	0.1	0.1
Yb, ppm	--	0.05	--	--	--
Zn, ppm	3	--	3	3	3
Zr, ppm	--	1	--	--	--

-- : Not determined using this digestion.

Table 1c. Lower limits of determination for miscellaneous methods of analyses for solid samples.

Element	Method of Analysis	Plant	Rock	Sediment	Soil
Ash, %	Gravimetric	<0.01	--	--	<0.01
Au, ppm	HGA-AAS	--	<0.005	<0.005	<0.005
Hg, ppm	CV-AAS	<0.02	<0.02	<0.02	<0.02
Total S, %	Combustion, IR	<0.03	<0.03	<0.03	<0.03

HGA-AAS: Heated graphite furnace - atomic absorption spectrometry (O'Leary and Meier, 1996).

CV-AAS: Cold vapor atomic absorption spectrometry (O'Leary and others, 1996).

Combustion, IR: Combustion - Infrared Analysis (Curry, 1996).

Table 2a: Field and laboratory methods with lower limits of determination (LLD) for the analysis of water samples.

Field Measurements			
Parameter	Approximate LLD	Method	Reference
Turbidity	0.1 ntu	Nephelometry	Fishman and Friedman (1989)
pH	2.00 to 11.00	Electrometric, glass electrode	Fishman and Friedman (1989)
Dissolved Oxygen	0.05 mg/L	Chemetrics ampoule (colorimetric	Fishman and Friedman (1989)
Conductivity	10 uS/cm	Electrometric, Wheatstone Bridge	Fishman and Friedman (1989)
Total Dissolved H	0.010 ug/L	Cold vapor-atomic fluorescence	J.G. Crock (1998) Unpublished data
Temperature	--	Thermocouple traceable to NIST standard	

Laboratory Measurements			
F	0.01 mg/l	Ion Chromatography	Fishman and Pyen (1979)
Cl	0.01 mg/l	Ion Chromatography	Fishman and Pyen (1979)
Nitrate	0.05 mg/l	Ion Chromatography	Fishman and Pyen (1979)
Sulfate	0.05 mg/l	Ion Chromatography	Fishman and Pyen (1979)

Table 2b. Lower limits of determination (LLD) for elemental analysis of water samples by inductively coupled plasma-mass spectrometry. (A.L. Meier, 1998, unpublished data.)

Element	LLD	Element	LLD
Ag, ug/L	0.01	Ni, ug/L	0.1
Al, ug/L	0.1	P, ug/L	5
As, ug/L	0.2	Pb, ug/L	0.05
Ba, ug/L	0.1	Pr, ug/L	0.01
Be, ug/L	0.05	Rb, ug/L	0.01
Ca, mg/L	0.05	Sb, ug/L	0.01
Cd, ug/L	0.02	Sc, ug/L	0.1
Ce, ug/L	0.01	Se, ug/L	0.2
Co, ug/L	0.02	SiO ₂ , mg/L	0.5
Cr, ug/L	1	Sm, ug/L	0.01
Cs, ug/L	0.01	Sulfate, mg/L	0.05
Cu, ug/L	0.5	Sr, ug/L	0.5
Dy, ug/L	0.005	Ta, ug/L	0.02
Er, ug/L	0.005	Tb, ug/L	0.005
Eu, ug/L	0.005	Te, ug/L	0.1
Fe, ug/L	10	Th, ug/L	0.005
Ga, ug/L	0.02	Ti, ug/L	0.1
Gd, ug/L	0.005	Tl, ug/L	0.05
Ge, ug/L	0.02	Tm, ug/L	0.005
Ho, ug/L	0.005	U, ug/L	0.005
In, ug/L	0.01	V, ug/L	0.1
K, ug/L	0.3	W, ug/L	0.02
La, ug/L	0.01	Y, ug/L	0.01
Li, ug/L	0.1	Yb, ug/L	0.01
Mg, mg/L	0.01	Zn, ug/L	0.5
Mn, ug/L	0.01		
Mo, ug/L	0.02		
Na, mg/L	0.01		
Nb, ug/L	0.02		
Nd, ug/L	0.01		

Table 3. Description and location of water sampling sites with selected field measurements.

Sample Numbe	Sample Description	Latitude	Longitude	PDOP*
97AK-01-A	Buck Creek	64.3190	-141.3768	--
97AK-01-B	Buck Creek downstream from Taylor's house	64.3190	-141.3768	--
97AK-02W-A	S. Reed's dredge, between plume and L.E.W.	64.2610	-141.8607	3.8
97AK-02W-B	S. Reed's dredge, within plume	64.2610	-141.8607	3.8
97AK-02W-C	S. Reed's dredge, between plume and R.E.W.	64.2610	-141.8607	3.8
97AK-03W-A	R. Goodson's dredge, between plume and L.E.W.	64.2683	-141.8935	3.5
97AK-03W-B	R. Goodson's dredge, within plume	64.2683	-141.8935	3.5
97AK-03W-C	R. Goodson's dredge, between plume and R.E.W.	64.2683	-141.8935	3.5
97AK-04W	N. Fork of Fortymile R., above Goodson's dredge, composite	64.2746	-141.9000	--
97AK-05W	N. Fork of Fortymile R., just below kink, single vertical composite	64.3773	-142.0185	4.5
97AK-06W	Hutchinson Creek	64.3987	-142.0160	3.5
97AK-07W-A	Bullion Creek	64.4388	-142.1383	4.2
97AK-07W-B	Field split of Bullion Creek	64.4388	-142.1383	4.2
97AK-08W	Bronwen Creek	64.3045	-141.9815	3.2
97AK-09W-A	Wilson Creek	64.2720	-141.9047	4.6
97AK-09W-B	Sample duplicate of Wilson Creek	64.2720	-141.9047	4.6
97AK-10W	Uhler Creek at confluence with S. Fork	64.2027	-141.7512	4.1
97AK-11W	Uhler Creek within cat-mining area	64.1988	-141.6229	--
97AK-12W	Uhler Creek approx. 1 mile upstream from site 11	64.1981	-141.5823	--
97AK-13W	Tributary to Uhler Creek from South	64.1980	-141.5823	--
97AK-14W	Uhler Creek above tributary	64.1981	-141.5800	--
97AK-15W-A	Alder Creek	64.3570	-141.4167	--
97AK-15W-B	Field blank			--
97AK-16W	O'Brien Creek	64.3163	-141.4188	3.4
97AK-17W	Hyporheic water at pyritic outcrop	64.2600	-141.7683	--
97AK-18W	N. Fork Fortymile R., above confluence with S. Fork	64.2427	-141.7563	2.7
97AK-19W	Hyporheic water at pyritic outcrop	64.2720	-141.7077	>40
97AK-20W	Hyporheic water at pyritic outcrop	64.2916	-141.6517	--
97AK-21W	Field blank run through "sniffer"			--
97AK-22W	37.0 mg "sniffer" filings in 55 ml 1:11 HNO ₃			--
97AK-03W-A	R. Goodson's dredge, between plume and L.E.W.	64.2683	-141.8935	--
97AK-03W-B	R. Goodson's dredge, within plume	64.2683	-141.8935	--
97AK-05W	N. Fork of Fortymile R., just below kink, single vertical composite	64.3773	-142.0185	--
97AK-03W-A	R. Goodson's dredge, between plume and L.E.W.	64.2683	-141.8935	--
97AK-03W-B	R. Goodson's dredge, within plume	64.2683	-141.8935	--
97AK-05W	N. Fork of Forty Mile R., just below kink, single vertical composite	64.3773	-142.0185	--

*Measure of the relative accuracy of the GPS reading.

Table 3. Description and location of water sampling sites with selected field measurements
(continued).

Sample Numbe	T°C	Conductivity uS/cm	pH	Dissolved Oxygen	Fe(II)	Turbidity	Discharge	Units	measured/ estimated
97AK-01-A	4.6	140	7.6	sat'd	--	0.88	10	L/s	estimated
97AK-01-B	4.6	140	7.6	sat'd	--	--	10	L/s	estimated
97AK-02W-A	12	80	7.696	sat'd	--	--	--	--	--
97AK-02W-B	12	80	7.561	sat'd	--	--	--	--	--
97AK-02W-C	12	90	7.85	sat'd	--	--	--	--	--
97AK-03W-A	11.8	110	7.048	sat'd	--	--	--	--	--
97AK-03W-B	11.8	100	7.43	sat'd	--	--	--	--	--
97AK-03W-C	11.8	90	7.51	sat'd	--	--	--	--	--
97AK-04W	13.3	160	7.85	sat'd	--	1.15	--	--	--
97AK-05W	9.6	90	7.93	sat'd	--	1.1	--	--	--
97AK-06W	7.5	70	7.83	sat'd	--	1.3	100	cfs	measured
97AK-07W-A	7	100	7.7	sat'd	--	1.7	40	cfs	measured
97AK-07W-B	7	100	7.62	sat'd	--	2.2	40	cfs	measured
97AK-08W	5.5	30	8.19	sat'd	--	0.54	23	cfs	measured
97AK-09W-A	6.4	90	7.74	sat'd	--	0.75	14	cfs	measured
97AK-09W-B	6.4	80	7.75	sat'd	--	0.69	14	cfs	measured
97AK-10W	11.4	40	7.37	sat'd	--	--	11.4	cfs	measured
97AK-11W	9.2	20	7.810	sat'd	--	4.6	4.2	cfs	measured
97AK-12W	7.2	20	7.198	sat'd	--	1.8	3.4	cfs	measured
97AK-13W	5.7	30	7.390	sat'd	--	21.0	0.7	cfs	measured
97AK-14W	7.5	20	7.384	sat'd		0.6			
97AK-15W-A	8.7	220	8.254	sat'd		0.4	18	cfs	measured
97AK-15W-B	--	--		sat'd					
97AK-16W	11.9	180	8.250	sat'd	--	0.78	--	cfs	measured
97AK-17W	14.1	210	7.39	1.5	0.25	--	--	--	--
97AK-18W	13.5	105	7.83	sat'd	0.10	0.32	900	cfs	measured
97AK-19W	15.0	160	7.65	2.0	0.50	--	--	--	--
97AK-20W	15.0	120	7.48	2.0	0.50	--	--	--	--
97AK-21W	--	--	--	sat'd	--	--	--	--	--
97AK-22W	--	--	--	sat'd	--	--	--	--	--
97AK-03W-A	--	--	--	sat'd	--	--	--	--	--
97AK-03W-B	--	--	--	sat'd	--	--	--	--	--
97AK-05W	--	--	--	sat'd	--	--	--	--	--
97AK-03W-A	--	--	--	sat'd	--	--	--	--	--
97AK-03W-B	--	--	--	sat'd	--	--	--	--	--
97AK-05W	--	--	--	sat'd	--	--	--	--	--

Table 4. Rock sample description and the location of sampling sites.

Field Numbe	Sample Description	Sample Type	Latitude	Longitude
97AD004	biotite schist (metasediment)	bedrock	64.3120	-141.4149
97AD007	mafic metavolcanic	bedrock	64.3079	-141.4118
97AD007B	quartz vein with sulfides in metavolcanic	vein	64.3079	-141.4118
97AD008A	mafic metavolcanic (metabasalt)	bedrock	64.3059	-141.4192
97AD008B	quartz vein in metavolcanic	vein	64.3059	-141.4192
97AD010	quartz vein in biotite schist	vein	64.3049	-141.4274
97AD011	quartz vein in biotite schist	vein	64.3034	-141.4290
97AD013	quartz vein in metabasalt	vein	64.3009	-141.4278
97AD016	biotite - hornblende schist with chert horizons	bedrock	64.2924	-141.4194
97AD016Z	biotite - hornblende schist with chert horizons	bedrock	64.2924	-141.4194
97AD025	biotite-hornblende diorite	bedrock	64.2632	-141.8701
97AD041	leucogranite (plagiogranite)	bedrock	64.2166	-141.7771
97AD101A	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.3073	-141.4200
97AD101AZ	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.3073	-141.4200
97AD101B	quartz vein in mafic metavolcanic	vein	64.3073	-141.4200
97AD102	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.2847	-141.4060
97AD107	muscovite biotite schist (metapelitic)	bedrock	64.2503	-141.3982
97AD108	biotite tonalite gneiss	bedrock	64.2321	-141.4043
97AD109	biotite tonalite gneiss	bedrock	64.1854	-141.3532
97AD114	hornblende monzodiorite	bedrock	64.1642	-141.5336
97AD116	hornblende granodiorite	bedrock	64.1531	-141.6158
97AD117	monzodiorite xenolith	bedrock	64.1490	-141.6164
97AD117Z	monzodiorite xenolith (biotite)	bedrock	64.1490	-141.6164
97AD120	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.2579	-141.3929
97AG001A	calcite vein, south side	vein	64.3254	-141.4105
97AG001B	calcite vein, north side	vein	64.3254	-141.4105
97AG001BZ	calcite vein, north side	vein	64.3254	-141.4105
97AG001C	calcite vein, north side	vein	64.3254	-141.4105
97AG002	biotite schist	bedrock	64.2699	-141.2810
97AG003	marble	bedrock	64.2477	-141.1448
97AG003Z	marble	bedrock	64.2477	-141.1448
97AG004	biotite schist	bedrock	64.2476	-141.1476
97AG005	ultramafic intrusion	bedrock	64.2621	-141.1467
97AG005Z	ultramafic intrusion	bedrock	64.2621	-141.1467
97AG006A	biotite schist	bedrock	64.2810	-141.2873
97AG006B	biotite schist	bedrock	64.2810	-141.2873
97AG006C	pyrite - rich horizon in biotite schist	bedrock	64.2810	-141.2873
97AG007	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.2703	-141.9022
97AG008A	biotite schist	bedrock	64.2726	-141.9047
97AG008B	quartz vein in biotite schist	vein	64.2726	-141.9047
97AG008C	quartz boudins in biotite schist	vein	64.2726	-141.9047

Table 4. Rock sample description and the location of sampling sites (continued).

Field Numbe	Sample Description	Sample Type	Latitude	Longitude
97AG009	schist	vein	64.2695	-141.8826
97AG010A	skarn (pyroxene - calcite - epidote - garnet) with gold?	bedrock	64.2715	-141.8766
97AG010B	hornblende granodiorite/monzodiorite	bedrock	64.2715	-141.8766
97AG011	silicified zone in iron - rich sediment	bedrock	64.2510	-141.7907
97AG012	marble	bedrock	64.2517	-141.7774
97AG013	sulfide - bearing quartz vein in biotite schist	vein	64.2516	-141.7717
97AG014A	biotite schist (metasediment)	bedrock	64.2511	-141.7705
97AG014B	silicic horizon in biotite schist	bedrock	64.2511	-141.7705
97AG015	leucogranite	bedrock	64.2440	-141.7681
97AG017	quartz vein iron - stained	vein	64.2265	-141.7923
97AG018A	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.2440	-141.7416
97AG019A	leucogranite sill in metavolcanic; iron - stained	bedrock	64.2481	-141.7266
97AG019B	hornblende-biotite-plagioclase schist (metabasalt?)	bedrock	64.2481	-141.7266
97AG020	hornblende diorite	bedrock	64.2688	-141.7333
97AG021	pyrite - rich siliceous metasediments	bedrock	64.2743	-141.7145
97AG022	pyrite - rich siliceous metasediments	bedrock	64.2733	-141.7079
97AG023	biotite schist	bedrock	64.2919	-141.6095
97AG023Z	biotite schist	bedrock	64.2919	-141.6095
97AG024	tonalite (muscovite + biotite)	bedrock	64.2949	-141.5320
97AG025	laminated marble	bedrock	64.2987	-141.4889
97AG025Z	laminated marble	bedrock	64.2987	-141.4889
97AG027	biotite tonalite orthogneiss	bedrock	64.2275	-141.6424
97AG029	biotite schist (metasediment)	bedrock	64.2310	-141.6960
97AG031	marble - laminated	bedrock	64.2903	-141.4729
97AG032A	iron - stained horizon in biotite schist	bedrock	64.2941	-141.4593
97AG032B	quartz vein 10 - 15 cm thick	vein	64.2941	-141.4593
97AG033	iron - rich biotite schist	bedrock	64.3014	-141.4748
97AG034	ultramafic intrusion	bedrock	64.3013	-141.4540
97AG035	biotite orthogneiss	bedrock	64.1905	-141.5018
97AG036A	biotite - muscovite tonalite	bedrock	64.1814	-141.4635
97AG036AZ	biotite - muscovite tonalite	bedrock	64.1814	-141.4635
97AG037	hornblende monzodiorite	bedrock	64.3372	-141.8400

Table 5. Description and location of soil, vegetation, and stream sediment collection sites.

Field Number	Site Description	Latitude	Longitude
97AK01	Confluence of Alder and O'Brien Creek, 0.25 mile upstream from bridge on Alder Creek	64.4053	-141.4191
97AK01	Buck Creek, NW of Taylor's	64.3174	-141.4216
97AK02	North Fork of the Forty-mile River, down stream of Reed operation and Wilson Creek	64.2602	-141.8431
97AK03	North Fork of the Forty-mile River, down stream of Goodson's operation and Wilson Creek	64.2690	-141.8911
97AK04	East side of the North Fork of the Forty-mile River, 1 mile downstream from the Kink	64.3763	-142.0190
97AK05	South bank of Hutchinson Creek near the confluence with the Forty-mile River	64.3989	-142.0193
97AK06	SE side of Bullion Creek near the confluence of the Forty-mile River	64.4378	-142.1423
97AK07	Forty-mile River	64.3047	-141.9807
97AK08	S side of Wilson Creek near the confluence with the Forty-mile River	64.2704	-141.9071
97AK09	N side of Uhler Creek near the confluence with the South Fork of the Forty-mile River	64.2035	-141.7525
97AK10	Upstream on Uhler Creek near old tailings (Schene's operation)	64.1988	-141.6229
97AK11	Upstream on Uhler Creek about 1.25 miles east of old tailings (Schene's operation)	64.3148	-141.5823
97AK12	W-facing side of knoll along Taylor Highway in granite-gneiss terrain	64.2503	-141.4002
97AK13	W-facing side of knoll along Taylor Highway in mafic schist terrain	64.2078	-141.3922

Table 6. Ion chromatography results for the analyses of water samples from the Fortymile River watershed, Alaska.
 [Samples filtered and acidified.]

Field Number	F, mg/L	Cl, mg/L	SO4, mg/L	NO3, mg/L
97AK-01-A	0.09	0.29	4.6	0.39
97AK-01-B	--	0.16	4.6	0.42
97AK-02W-A	0.11	0.59	16	0.38
97AK-02W-B	--	0.59	17	0.31
97AK-02W-C	--	0.59	17	0.35
97AK-03W-A	0.13	0.60	16	0.35
97AK-03W-B	--	0.57	16	0.41
97AK-03W-C	--	0.58	16	0.33
97AK-04W	0.11	0.58	17	0.29
97AK-05W	0.11	0.60	17	0.28
97AK-06W	0.13	0.22	22	0.55
97AK-07W-A	0.19	0.14	14	0.79
97AK-07W-B	--	0.21	14	0.73
97AK-08W	0.18	0.20	11	0.96
97AK-09W-A	0.15	0.19	42	0.86
97AK-09W-B	--	0.18	42	0.87
97AK-10W	0.10	0.22	14	0.89
97AK-11W	0.10	0.09	6.6	1.1
97AK-12W	0.09	0.06	7.9	0.75
97AK-13W	0.11	0.08	13	0.54
97AK-14W	0.09	0.06	6.8	0.85
97AK-15W-A	0.14	0.41	64	0.39
97AK-15W-B	--	<0.02	0.4	0.17
97AK-16W	0.12	0.41	64	8.1
97AK-17W	0.12	0.60	64	0.19
97AK-18W	0.12	0.90	23	0.31
97AK-19W	0.12	0.49	35	0.20
97AK-20W	0.12	0.48	13	0.26
97AK-21W	--	0.07	1.6	0.19

-- : Not Determined

Table 7. Chemical results for the analyses of major and minor elements in water samples from the Fortymile River watershed, Alaska.

Field No	Treatment	Ag. ^{ug/L}	Al. ^{ug/L}	As. ^{ug/L}	Ba. ^{ug/L}	Be. ^{ug/L}	Ca. ^{mg/L}	Cd. ^{ug/L}	Ce. ^{ug/L}	Co. ^{ug/L}	Cr. ^{ug/L}	Cs. ^{ug/L}	Cu. ^{ug/L}	Dy. ^{ug/L}
97AK-01-A	FA	0.06	70	0.4	45	<0.05	28	<0.02	0.59	0.1	2	0.02	3	0.091
97AK-01-B	FA	0.05	69	0.4	44	<0.05	28	<0.02	0.59	0.1	2	0.02	3	0.091
97AK-02W-A	FA	0.04	67	0.3	17	<0.05	13	<0.02	0.50	0.07	2	<0.01	2	0.078
97AK-02W-B	FA	0.03	68	0.3	16	<0.05	13	<0.02	0.50	0.07	2	<0.01	2	0.087
97AK-02W-C	FA	0.02	68	0.3	16	<0.05	13	<0.02	0.5	0.06	3	<0.01	2	0.090
97AK-03W-A	FA	0.02	66	0.3	17	<0.05	13	<0.02	0.4	0.06	3	<0.01	2	0.069
97AK-03W-B	FA	0.02	64	0.3	17	<0.05	13	<0.02	0.4	0.05	3	<0.01	2	0.071
97AK-03W-C	FA	0.01	62	0.3	17	<0.05	13	<0.02	0.4	0.05	3	<0.01	2	0.066
97AK-04W	FA	0.01	58	0.3	17	<0.05	13	<0.02	0.4	0.05	3	<0.01	2	0.070
97AK-05W	FA	0.01	54	0.3	16	<0.05	13	<0.02	0.4	0.04	3	<0.01	2	0.071
97AK-06W	FA	<0.01	83	0.2	24	<0.05	16	<0.02	0.69	0.08	3	<0.01	2	0.10
97AK-07W-A	FA	<0.01	68	<0.2	16	<0.05	19	<0.02	0.85	0.08	3	<0.01	2	0.14
97AK-07W-B	FA	<0.01	68	<0.2	16	<0.05	19	<0.02	0.91	0.1	4	<0.01	2	0.14
97AK-08W	FA	<0.01	110	0.2	16	<0.05	9.7	<0.02	1.2	0.07	4	<0.01	2	0.14
97AK-09W-A	FA	<0.01	160	0.3	25	<0.05	17	<0.02	0.54	0.4	4	<0.01	3	0.12
97AK-09W-B	FA	<0.01	160	0.3	25	<0.05	17	<0.02	0.55	0.4	3	<0.01	3	0.14
97AK-10W	FA	<0.01	180	0.4	27	<0.05	9.0	<0.02	1.4	0.1	4	<0.01	4	0.16
97AK-11W	FA	<0.01	200	0.4	20	<0.05	7.1	<0.02	1.3	0.2	4	<0.01	3	0.12
97AK-12W	FA	<0.01	200	0.3	19	<0.05	7.0	<0.02	1.2	0.1	4	<0.01	3	0.13
97AK-13W	FA	<0.01	170	0.5	21	<0.05	5.6	<0.02	1.1	0.3	5	<0.01	3	0.13
97AK-14W	FA	<0.01	210	0.3	18	<0.05	7.4	<0.02	1.2	0.1	5	<0.01	3	0.11
97AK-15W-A	FA	<0.01	23	0.3	46	<0.05	35	<0.02	0.2	0.07	4	0.03	2	0.04
97AK-15W-B	FA	<0.01	0.18	<0.2	0.2	<0.05	<0.05	<0.02	<0.01	<0.02	4	<0.01	<0.5	<0.005
97AK-16W	FA	<0.01	25	0.4	40	<0.05	25	<0.02	0.2	0.05	4	<0.01	3	0.04
97AK-17W	FA	<0.01	18	0.2	13	<0.05	27	<0.02	0.67	0.08	4	0.41	2	0.11
97AK-18W	FA	<0.01	31	0.3	20	<0.05	16	<0.02	0.2	0.03	4	<0.01	2	0.04
97AK-19W	FA	<0.01	20	0.3	14	<0.05	28	<0.02	0.3	0.1	4	<0.01	3	0.072
97AK-20W	FA	<0.01	13	0.2	15	0.05	18	0.07	0.3	0.1	4	0.02	10	0.16
97AK-21W	FA	<0.01	4.0	<0.2	0.5	<0.05	0.2	<0.02	0.02	<0.02	5	<0.01	<0.5	<0.005
97AK-22W	FA	0.02	240	9.7	2	<0.05	<0.05	0.1	0.04	15	140	<0.01	64	<0.005
97AK-03W-A	RU	<0.01	60	0.4	12	<0.05	13	<0.02	0.4	0.06	6	<0.01	2	0.060
97AK-03W-B	RU	<0.01	57	0.3	12	<0.05	13	<0.02	0.3	0.05	6	<0.01	2	0.063
97AK-05W	RU	<0.01	53	0.3	12	<0.05	13	<0.02	0.3	0.05	6	<0.01	2	0.066
97AK-03W-A	RA	<0.01	85	0.4	17	<0.05	13	<0.02	0.50	0.07	6	<0.01	2	0.078
97AK-03W-B	RA	<0.01	87	0.4	18	<0.05	13	<0.02	0.53	0.07	6	<0.01	2	0.083
97AK-05W	RA	<0.01	67	0.3	17	<0.05	13	<0.02	0.4	0.06	5	<0.01	2	0.069

[FA = filtered and acidified; RU = unfiltered and not acidified; RA = unfiltered and acidified.]

Table 7. Chemical results for the analyses of major and minor elements in water samples from the
Fortymile River watershed, Alaska (continued).

Field No	Er,ug/L	Eu,ug/L	Fe,ug/L	Ga,ug/L	Gd,ug/L	Ge,ug/L	Ho,ug/L	In,ug/L	K,ug/L	La,ug/L	Li,ug/L	Mg,mg/L
97AK-01-A	0.050	0.02	150	< 0.02	0.097	< 0.02	0.02	< 0.01	770	0.4	0.5	1.5
97AK-01-B	0.04	0.02	150	< 0.02	0.100	< 0.02	0.02	< 0.01	660	0.4	0.6	1.5
97AK-02W-A	0.04	0.02	110	< 0.02	0.082	< 0.02	0.02	< 0.01	480	0.4	1.8	2.9
97AK-02W-B	0.050	0.02	110	< 0.02	0.085	< 0.02	0.02	< 0.01	470	0.4	1.8	2.8
97AK-02W-C	0.04	0.02	110	< 0.02	0.087	< 0.02	0.01	< 0.01	480	0.4	1.8	2.8
97AK-03W-A	0.03	0.02	100	< 0.02	0.079	< 0.02	0.02	< 0.01	470	0.4	1.7	2.8
97AK-03W-B	0.04	0.01	97	< 0.02	0.072	< 0.02	0.02	< 0.01	470	0.3	1.8	2.9
97AK-03W-C	0.04	0.01	100	< 0.02	0.095	< 0.02	0.02	< 0.01	470	0.3	1.7	2.8
97AK-04W	0.04	0.02	99	< 0.02	0.077	< 0.02	0.02	< 0.01	460	0.3	1.7	2.8
97AK-05W	0.04	0.01	97	< 0.02	0.080	< 0.02	0.01	< 0.01	450	0.3	1.8	2.9
97AK-06W	0.052	0.02	120	< 0.02	0.110	< 0.02	0.02	< 0.01	570	0.50	1.4	3.0
97AK-07W-A	0.084	0.03	130	< 0.02	0.170	< 0.02	0.03	< 0.01	460	0.62	0.5	1.8
97AK-07W-B	0.084	0.03	120	< 0.02	0.170	< 0.02	0.03	< 0.01	460	0.62	0.3	1.8
97AK-08W	0.065	0.03	120	< 0.02	0.220	< 0.02	0.03	< 0.01	450	1.0	1.0	1.3
97AK-09W-A	0.072	0.03	240	< 0.02	0.140	< 0.02	0.03	< 0.01	570	0.4	0.6	3.5
97AK-09W-B	0.088	0.03	240	< 0.02	0.150	< 0.02	0.02	< 0.01	580	0.4	0.6	3.5
97AK-10W	0.079	0.04	190	< 0.02	0.170	< 0.02	0.03	< 0.01	870	0.87	0.4	1.5
97AK-11W	0.074	0.04	280	< 0.02	0.160	< 0.02	0.03	< 0.01	500	0.77	0.1	1.2
97AK-12W	0.066	0.03	220	< 0.02	0.150	< 0.02	0.02	< 0.01	490	0.71	0.2	1.3
97AK-13W	0.074	0.03	440	< 0.02	0.160	< 0.02	0.02	< 0.01	660	0.59	0.3	1.6
97AK-14W	0.066	0.03	190	< 0.02	0.120	< 0.02	0.02	< 0.01	450	0.73	0.1	1.2
97AK-15W-A	0.02	0.01	75	< 0.02	0.040	< 0.02	0.01	< 0.01	780	0.2	2.3	12
97AK-15W-B	< 0.005	< 0.005	< 10	< 0.02	< 0.005	< 0.02	< 0.005	< 0.01	< 0.3	< 0.01	< 0.1	< 0.01
97AK-16W	0.03	0.006	76	< 0.02	0.040	< 0.02	0.01	< 0.01	700	0.1	2.1	13
97AK-17W	0.062	0.02	110	< 0.02	0.130	< 0.02	0.02	< 0.01	1100	0.54	2.3	4.3
97AK-18W	0.03	0.01	53	< 0.02	0.056	< 0.02	0.007	< 0.01	560	0.2	1.8	3.4
97AK-19W	0.057	0.02	120	< 0.02	0.067	< 0.02	0.02	< 0.01	1300	0.2	1.2	2.4
97AK-20W	0.113	0.02	370	< 0.02	0.130	< 0.02	0.04	< 0.01	1200	0.3	1.7	3.9
97AK-21W	< 0.005	< 0.005	< 10	< 0.02	< 0.005	< 0.02	< 0.005	< 0.01	5.4	< 0.01	< 0.1	< 0.01
97AK-22W	< 0.005	< 0.005	500000	1.6	< 0.005	6.4	< 0.005	0.02	8.3	0.02	< 0.1	< 0.01
97AK-03W-A	0.04	0.01	120	< 0.02	0.068	< 0.02	0.01	< 0.01	480	0.2	1.8	2.9
97AK-03W-B	0.04	0.01	83	< 0.02	0.055	< 0.02	0.01	< 0.01	470	0.2	2.0	2.9
97AK-05W	0.03	0.01	79	< 0.02	0.068	< 0.02	0.01	< 0.01	450	0.3	2.2	3.0
97AK-03W-A	0.051	0.02	150	< 0.02	0.095	< 0.02	0.02	< 0.01	460	0.4	1.6	2.7
97AK-03W-B	0.05	0.02	150	< 0.02	0.100	< 0.02	0.02	< 0.01	450	0.4	1.7	2.7
97AK-05W	0.05	0.02	150	< 0.02	0.074	< 0.02	0.02	< 0.01	440	0.3	1.9	2.9

[FA = filtered and acidified; RU = unfiltered and not acidified; RA = unfiltered and acidified.]

Table 7. Chemical results for the analyses of major and minor elements in water samples from the Fortymile River watershed, Alaska (continued).

Field No	Mn,ug/L	Mo,ug/L	Na,mg/L	Nb,ug/L	Ni,ug/L	P,ug/L	Pb,ug/L	Pr,ug/L	Rb,ug/L	Sb,ug/L	Sc,ug/L
97AK-01-A	0.68	0.3	0.90	< 0.02	0.40	1.8	35	0.2	0.1	0.74	0.2
97AK-01-B	0.58	0.2	0.90	< 0.02	0.41	1.8	39	0.08	0.09	0.70	0.2
97AK-02W-A	1.0	0.3	1.7	< 0.02	0.40	1.1	30	< 0.05	0.09	0.60	0.1
97AK-02W-B	0.98	0.3	1.7	< 0.02	0.35	1.1	31	< 0.05	0.09	0.60	0.1
97AK-02W-C	0.76	0.3	1.7	< 0.02	0.38	1.1	31	< 0.05	0.08	0.63	0.09
97AK-03W-A	0.65	0.3	1.7	< 0.02	0.38	1.1	32	< 0.05	0.08	0.62	0.1
97AK-03W-B	0.63	0.3	1.7	< 0.02	0.32	1.1	26	< 0.05	0.08	0.63	0.1
97AK-03W-C	0.65	0.3	1.7	< 0.02	0.34	1.1	30	< 0.05	0.08	0.62	0.08
97AK-04W	0.72	0.3	1.7	< 0.02	0.32	1.1	28	< 0.05	0.09	0.61	0.09
97AK-05W	0.82	0.3	1.8	< 0.02	0.33	1.1	28	0.2	0.08	0.58	0.1
97AK-06W	0.84	0.2	1.1	< 0.02	0.56	1.1	32	< 0.05	0.1	0.60	0.08
97AK-07W-A	1.3	0.2	1.4	< 0.02	0.61	1.0	32	< 0.05	0.2	0.70	0.04
97AK-07W-B	1.4	0.2	1.4	< 0.02	0.67	1.0	33	< 0.05	0.2	0.71	0.05
97AK-08W	0.57	0.2	0.99	< 0.02	1.0	0.9	29	< 0.05	0.26	0.80	0.04
97AK-09W-A	4.1	0.1	1.2	< 0.02	0.46	1.7	31	< 0.05	0.1	0.70	0.08
97AK-09W-B	4.1	0.2	1.2	< 0.02	0.47	1.7	33	< 0.05	0.1	0.70	0.08
97AK-10W	5.4	0.2	1.6	0.03	0.89	0.9	32	< 0.05	0.22	0.99	0.08
97AK-11W	9.6	0.1	0.81	0.02	0.78	0.9	35	< 0.05	0.2	0.58	0.06
97AK-12W	4.5	0.09	0.86	0.02	0.72	0.8	37	< 0.05	0.2	0.68	0.06
97AK-13W	23	0.2	1.3	0.04	0.72	0.6	43	< 0.05	0.2	0.4	0.08
97AK-14W	1.4	0.06	0.76	0.03	0.71	0.8	36	< 0.05	0.2	0.75	0.09
97AK-15W-A	1.4	0.4	1.4	< 0.02	0.20	1.7	30	< 0.05	0.04	1.2	0.08
97AK-15W-B	< 0.01	< 0.02	< 0.01	< 0.02	< 0.01	< 0.1	8	< 0.05	< 0.01	< 0.01	< 0.1
97AK-16W	0.69	0.50	1.4	< 0.02	0.1	1.8	31	< 0.05	0.03	0.92	0.2
97AK-17W	4.6	0.56	2.0	< 0.02	0.56	1.0	39	< 0.05	0.1	2.1	0.50
97AK-18W	0.34	0.3	2.1	< 0.02	0.2	0.9	30	< 0.05	0.04	0.84	0.38
97AK-19W	4.1	0.50	1.8	< 0.02	0.23	1.6	38	< 0.05	0.05	1.7	0.1
97AK-20W	14	2.3	1.7	< 0.02	0.33	3.3	37	< 0.05	0.07	2.1	0.1
97AK-21W	0.16	0.06	< 0.01	< 0.02	< 0.01	< 0.1	9	< 0.05	< 0.01	0.02	< 0.1
97AK-22W	1600	14	0.01	1.7	0.02	35	270	1.2	< 0.01	0.02	0.79
97AK-03W-A	0.94	0.4	1.7	0.03	0.30	0.9	46	< 0.05	0.06	0.59	0.2
97AK-03W-B	0.89	0.3	1.7	0.02	0.28	0.9	35	< 0.05	0.07	0.60	0.2
97AK-05W	1.0	0.3	1.8	< 0.02	0.27	0.9	31	< 0.05	0.06	0.56	0.1
97AK-03W-A	1.2	0.2	1.6	0.05	0.40	1.0	40	< 0.05	0.09	0.67	0.09
97AK-03W-B	1.4	0.2	1.6	0.03	0.37	1.0	40	< 0.05	0.09	0.64	0.08
97AK-05W	1.5	0.2	1.7	< 0.02	0.35	1	35	< 0.05	0.09	0.57	0.07

[FA = filtered and acidified; RU = unfiltered and not acidified; RA = unfiltered and acidified.]

Table 7. Chemical results for the analyses of major and minor elements in water samples from the Fortymile River watershed, Alaska (continued).

Field No	Se,ug/L	SiO ₂ ,mg/L	Sm,ug/L	Sn,ug/L	SO ₄ ,mg/L	Sr,ug/L	Ta,ug/L	Tb,ug/L	Te,ug/L	Th,ug/L	Tl,ug/L
97AK-01-A	<0.2	8.0	0.1	<0.05	6.2	50	<0.02	0.01	1.0	0.09	2.6
97AK-01-B	0.3	8.0	0.09	<0.05	6.2	50	<0.02	0.02	0.4	0.08	2.8
97AK-02W-A	0.3	6.6	0.08	<0.05	18	76	<0.02	0.01	<0.1	0.08	1.6
97AK-02W-B	0.3	6.6	0.08	<0.05	18	75	<0.02	0.01	<0.1	0.08	1.6
97AK-02W-C	0.2	6.7	0.09	<0.05	18	76	<0.02	0.01	<0.1	0.08	1.6
97AK-03W-A	0.2	6.7	0.08	<0.05	18	76	<0.02	0.01	<0.1	0.07	1.5
97AK-03W-B	0.3	6.7	0.08	<0.05	18	75	<0.02	0.01	<0.1	0.07	1.4
97AK-03W-C	0.3	6.7	0.08	<0.05	18	75	<0.02	0.01	<0.1	0.06	1.5
97AK-04W	0.3	6.6	0.07	<0.05	18	76	<0.02	0.01	<0.1	0.07	1.4
97AK-05W	0.3	6.7	0.06	<0.05	18	79	<0.02	0.009	<0.1	0.06	1.3
97AK-06W	0.4	6.8	0.08	<0.05	22	81	<0.02	0.02	<0.1	0.09	2.2
97AK-07W-A	0.4	7.5	0.1	<0.05	15	65	<0.02	0.02	<0.1	0.08	1.6
97AK-07W-B	0.4	7.5	0.2	<0.05	15	66	<0.02	0.02	<0.1	0.08	1.6
97AK-08W	0.3	7.1	0.20	<0.05	11	37	<0.02	0.03	<0.1	0.14	2.6
97AK-09W-A	0.4	7.4	0.1	<0.05	38	78	<0.02	0.02	<0.1	0.08	2.5
97AK-09W-B	0.4	7.5	0.1	<0.05	38	78	<0.02	0.02	<0.1	0.08	2.3
97AK-10W	0.3	8.6	0.2	<0.05	15	34	<0.02	0.02	<0.1	0.15	3.8
97AK-11W	0.2	8.4	0.2	<0.05	7.3	21	<0.02	0.02	<0.1	0.14	4.5
97AK-12W	0.3	8.5	0.2	<0.05	9.0	20	<0.02	0.02	<0.1	0.14	4.2
97AK-13W	0.4	9.3	0.1	<0.05	14	18	<0.02	0.02	<0.1	0.13	4.6
97AK-14W	0.3	8.6	0.2	<0.05	8.0	21	<0.02	0.02	<0.1	0.14	3.9
97AK-15W-A	0.4	8.0	0.04	<0.05	56	110	<0.02	0.007	<0.1	0.04	1.3
97AK-15W-B	0.2	0.6	<0.01	<0.05	0.5	<0.02	<0.005	<0.1	<0.005	0.1	0.1
97AK-16W	0.4	7.2	0.03	<0.05	53	120	<0.02	0.007	<0.1	0.03	0.9
97AK-17W	0.6	7.3	0.1	<0.05	53	120	<0.02	0.02	<0.1	0.02	1.0
97AK-18W	0.3	6.7	0.04	<0.05	22	96	<0.02	0.007	<0.1	0.04	0.7
97AK-19W	0.5	8.0	0.04	<0.05	31	81	<0.02	0.01	<0.1	0.03	1.2
97AK-20W	1	7.9	0.08	<0.05	14	74	<0.02	0.02	<0.1	0.04	0.7
97AK-21W	0.2	0.6	<0.01	<0.05	0.6	0.4	<0.02	<0.005	<0.1	<0.005	0.3
97AK-22W	0.3	3	<0.01	5.0	2.0	0.2	0.09	<0.005	<0.1	0.02	4.0
97AK-03W-A	0.3	7.8	0.06	<0.05	17	76	0.2	0.01	<0.1	0.11	1.5
97AK-03W-B	0.3	7.4	0.06	<0.05	16	76	0.1	0.01	<0.1	0.08	1.2
97AK-05W	0.4	7.3	0.05	<0.05	17	78	0.06	0.009	<0.1	0.08	1.1
97AK-03W-A	0.2	7.4	0.08	<0.05	17	74	<0.02	0.01	<0.1	0.06	3.3
97AK-03W-B	0.2	7.2	0.09	<0.05	17	75	<0.02	0.02	<0.1	0.05	3.8
97AK-05W	0.4	7.4	0.07	<0.05	18	78	<0.02	0.01	<0.1	0.04	2.3

[FA = filtered and acidified; RU = unfiltered and not acidified; RA = unfiltered and acidified.]

Table 7. Chemical results for the analyses of major and minor elements in water samples from the Fortymile River watershed, Alaska (continued).

Field No	Tl, $\mu\text{g/L}$	Tm, $\mu\text{g/L}$	U, $\mu\text{g/L}$	V, $\mu\text{g/L}$	W, $\mu\text{g/L}$	Y, $\mu\text{g/L}$	Yb, $\mu\text{g/L}$	Zn, $\mu\text{g/L}$
97AK-01-A	0.08	0.008	0.17	0.5	< 0.02	0.60	0.04	0.9
97AK-01-B	0.05	0.008	0.17	0.6	< 0.02	0.60	0.05	0.6
97AK-02W-A	< 0.05	0.006	0.42	0.3	< 0.02	0.55	0.05	0.8
97AK-02W-B	< 0.05	0.007	0.40	0.3	< 0.02	0.56	0.05	0.6
97AK-02W-C	< 0.05	0.008	0.40	0.3	< 0.02	0.54	0.05	0.8
97AK-03W-A	< 0.05	0.007	0.40	0.3	< 0.02	0.50	0.05	1.0
97AK-03W-B	< 0.05	0.005	0.40	0.3	< 0.02	0.50	0.04	1.0
97AK-03W-C	< 0.05	0.006	0.41	0.3	< 0.02	0.50	0.04	1.0
97AK-04W	< 0.05	0.005	0.39	0.2	< 0.02	0.5	0.04	0.6
97AK-05W	< 0.05	0.005	0.42	0.2	< 0.02	0.4	0.04	0.6
97AK-06W	< 0.05	0.008	0.38	0.2	0.04	0.69	0.05	0.8
97AK-07V-A	< 0.05	0.01	0.38	0.2	< 0.02	1.0	0.07	< 0.5
97AK-07V-B	< 0.05	0.01	0.38	0.2	< 0.02	1.1	0.09	< 0.5
97AK-08W	< 0.05	0.01	0.54	0.3	< 0.02	0.85	0.06	< 0.5
97AK-09V-A	< 0.05	0.009	0.55	0.2	< 0.02	0.81	0.07	0.6
97AK-09V-B	< 0.05	0.01	0.54	0.2	< 0.02	0.83	0.06	0.7
97AK-10W	< 0.05	0.01	0.08	0.6	< 0.02	0.90	0.08	0.7
97AK-11W	< 0.05	0.01	0.08	0.7	< 0.02	0.79	0.07	0.9
97AK-12W	< 0.05	0.009	0.07	0.6	< 0.02	0.72	0.07	0.6
97AK-13W	< 0.05	0.01	0.09	1	< 0.02	0.76	0.08	0.9
97AK-14W	< 0.05	0.01	0.07	0.5	< 0.02	0.68	0.06	0.8
97AK-15W-A	< 0.05	< 0.005	0.71	0.3	0.02	0.3	0.03	< 0.5
97AK-15W-B	< 0.05	< 0.005	< 0.005	< 0.1	< 0.02	< 0.01	< 0.01	< 0.5
97AK-16W	< 0.05	< 0.005	0.68	0.3	< 0.02	0.3	0.02	0.5
97AK-17W	< 0.05	0.01	0.31	0.1	< 0.02	0.88	0.06	1.0
97AK-18W	< 0.05	< 0.005	0.52	0.2	< 0.02	0.3	0.02	1.0
97AK-19W	< 0.05	0.006	0.47	0.2	< 0.02	0.62	0.05	0.7
97AK-20W	0.3	0.02	0.41	0.7	0.03	1.9	0.2	3.0
97AK-21W	0.09	< 0.005	< 0.005	< 0.1	< 0.02	< 0.01	< 0.01	1.0
97AK-22W	0.06	< 0.005	0.01	4	1.4	0.02	< 0.01	20.0
97AK-03W-A	< 0.05	0.005	0.34	0.2	0.75	0.4	0.04	< 0.5
97AK-03W-B	< 0.05	0.005	0.36	0.2	0.52	0.4	0.04	< 0.5
97AK-05W	< 0.05	0.006	0.35	0.2	0.4	0.4	0.04	< 0.5
97AK-03V-A	< 0.05	0.007	0.35	0.3	0.1	0.52	0.05	< 0.5
97AK-03V-B	< 0.05	0.007	0.40	0.3	0.05	0.55	0.04	< 0.5
97AK-05W	< 0.05	0.005	0.39	0.2	0.03	0.5	0.04	< 0.5

[FA = filtered and acidified; RU = unfiltered and not acidified; RA = unfiltered and acidified.]

Table 8. X-ray fluorescence major element determinations for selected rock samples from the Forty-mile River watershed, Alaska.

Sample Num	SiO ₂ ,%	Al ₂ O ₃ ,%	Fe ₂ O ₃ %,	MgO, %	CaO, %	Na ₂ O, %	K ₂ O, %	TiO ₂ , %	P ₂ O ₅ , %	MnO, %	LOI, % *
97AD008A	48.9	13.1	15.6	5.63	9.24	2.95	0.29	2.21	0.27	0.25	0.41
97AD025	58.0	15.3	7.02	3.30	7.02	2.94	3.00	0.61	0.39	0.13	0.95
97AD101A	47.9	15.6	10.4	8.18	10.6	2.80	0.42	1.74	0.35	0.16	0.79
97AD101AZ	47.8	15.5	10.4	8.16	10.6	2.79	0.42	1.75	0.31	0.16	0.81
97AD102	43.3	12.1	20.2	6.44	9.65	2.32	0.13	4.17	0.12	0.22	0.66
97AD107	73.7	9.92	3.81	1.49	3.81	0.48	2.03	0.52	0.11	0.05	2.14
97AD108	73.2	15.1	0.49	0.19	2.08	4.66	2.51	0.07	0.05	0.01	0.47
97AD109	62.4	17.4	5.02	2.13	3.81	4.27	2.00	0.80	0.26	0.09	0.82
97AD114	58.8	18.2	4.93	1.57	4.29	4.41	5.22	0.42	0.38	0.11	0.39
97AD116	58.6	17.5	5.98	2.04	5.00	3.99	3.53	0.58	0.40	0.11	0.94
97AD117	40.9	7.11	14.8	14.6	13.9	0.40	2.87	1.36	1.55	0.13	0.70
97AD117Z	40.8	7.03	14.9	14.6	14.1	0.38	2.84	1.36	1.57	0.13	0.65
97AD120	48.1	17.7	12.6	5.23	7.90	3.71	0.60	1.42	0.43	0.32	0.93
97AG015	74.8	13.6	0.28	<0.10	0.10	4.29	4.81	0.09	<0.05	<0.01	0.46
97AG018	50.6	20.4	8.47	3.88	5.67	3.92	3.54	0.87	0.30	0.12	0.79
97AG020	60.6	14.9	6.99	2.78	5.12	2.89	3.29	0.63	0.36	0.13	0.89
97AG021	79.9	7.96	1.45	1.82	2.44	1.57	1.19	0.34	0.18	0.02	2.04
97AG022	80.5	8.41	2.45	1.38	1.33	0.88	0.90	0.30	0.18	0.02	2.77
97AG023	70.9	11.9	5.60	2.54	2.07	1.55	2.20	0.67	0.25	0.15	1.07
97AG023Z	70.9	11.9	5.60	2.56	2.06	1.54	2.21	0.66	0.25	0.15	1.10
97AG024	70.3	15.4	1.80	0.61	3.20	3.29	2.60	0.19	0.11	0.06	1.10
97AG025	38.1	1.55	0.61	1.15	31.9	0.22	0.22	0.07	0.15	0.03	25.5
97AG025Z	37.8	1.55	0.62	1.16	32.0	0.20	0.22	0.07	0.15	0.03	25.6
97AG027	63.7	17.0	4.34	1.60	5.27	3.50	2.52	0.42	0.25	0.10	0.54
97AG029	65.8	11.0	8.91	2.35	4.31	4.25	0.42	1.36	0.52	0.17	0.24
97AG031	6.52	0.48	0.32	3.57	48.6	<0.15	0.14	<0.02	0.14	0.02	40.1
97AG032A	73.9	12.1	3.30	0.97	0.91	1.19	1.74	0.46	0.20	0.01	4.63
97AG032B	88.6	4.08	2.28	0.19	0.29	0.24	1.69	0.15	0.12	<0.01	1.55
97AG033	74.2	9.22	3.77	2.85	4.08	1.14	1.14	0.53	0.29	0.04	1.50
97AG034	44.1	1.27	6.62	32.8	5.37	<0.15	0.03	0.05	0.08	0.1	7.80
97AG035	80.8	7.97	3.31	1.57	0.36	0.43	2.52	0.44	0.14	0.12	1.20
97AG036A	70.0	16.3	1.65	0.64	3.22	4.21	1.73	0.20	0.13	0.03	0.46
97AG036AZ	70.1	16.4	1.70	0.65	3.20	4.24	1.77	0.20	0.14	0.03	0.50
97AG037	55.4	15.1	7.76	4.42	7.61	2.95	3.25	0.65	0.44	0.15	0.90
97WRS1	71.8	5.49	2.06	0.80	9.19	0.39	0.60	0.23	0.14	0.1	8.64
97WRS2	70.7	11.8	4.83	1.88	0.63	1.12	2.82	0.58	0.19	0.06	4.53

*Loss on ignition at 925C.

Table 9. Rare earth element determinations (ICP-MS sinter method) for selected rock samples from the Fortymile River watershed, Alaska.

Field Number	Y, ppm	La, ppm	Ce, ppm	Pr, ppm	Nd, ppm	Sm, ppm	Eu, ppm	Tb, ppm	Gd, ppm	Dy, ppm	Ho, ppm	Er, ppm	Tm, ppm	Yb, ppm
97AD008A	56	5.3	14	2.5	14	4.7	1.6	1.2	6.4	8.0	1.8	5.2	0.69	5.2
97AD025	22	22	35	4.6	19	3.7	0.99	0.54	3.4	3.0	0.64	1.9	0.24	1.9
97AD101A	41	10	22	3.5	18	4.9	1.8	1.0	5.6	6.3	1.3	3.8	0.48	3.6
97AD101AZ	41	10	22	3.4	17	4.6	1.7	1.0	5.5	6.1	1.3	3.7	0.47	3.6
97AD102	34	2.3	6.4	1.2	7.0	2.7	1.1	0.77	3.8	4.9	1.1	3.2	0.42	3.1
97AD107	20	23	36	4.9	19	3.4	0.96	0.52	3.1	2.9	0.60	1.7	0.22	1.7
97AD108	1.3	0.99	1.6	<0.3	0.71	0.20	0.13	0.04	0.25	0.19	0.03	0.083	0.01	0.1
97AD109	24	15	28	3.5	14	3.2	0.92	0.58	3.4	3.5	0.73	2.2	0.29	2.2
97AD114	19	23	38	5.1	22	4.5	1.4	0.57	3.7	3.0	0.58	1.6	0.21	1.5
97AD116	29	25	48	7.3	32	6.5	1.6	0.86	5.5	4.5	0.91	2.6	0.32	2.3
97AD117	12	11	22	3.3	16	3.6	0.97	0.45	3.4	2.1	0.38	0.94	0.11	0.74
97AD117Z	12	11	23	3.4	17	3.9	1.0	0.46	3.5	2.3	0.39	1.0	0.11	0.72
97AD120	21	7.2	14	2.1	10	2.7	1.2	0.54	3.2	3.2	0.71	2.0	0.25	1.9
97AG015	0.64	<0.3	<1	<0.3	<0.3	0.05	0.14	0.009	0.050	0.056	<0.02	0.055	0.01	0.09
97AG018	19	11	20	2.8	12	2.9	1.0	0.50	2.9	2.9	0.59	1.8	0.23	1.8
97AG020	20	8	30	4.1	18	3.6	1.1	0.54	3.5	3.0	0.62	1.8	0.24	1.7
97AG021	-	8.9	14	2.2	8.5	1.8	0.47	0.28	1.9	1.7	0.36	1.1	0.16	1.1
97AG022	-	15	22	3.7	14	3.0	0.60	0.40	2.9	2.1	0.42	1.2	0.18	1.2
97AG023	-	17	36	4.6	19	4.1	0.99	0.70	4.4	4.2	0.88	2.5	0.39	2.5
97AG023Z	-	18	36	4.8	19	4.3	1.0	0.71	4.4	4.3	0.91	2.7	0.39	2.6
97AG024	8.8	9.4	14	1.8	7.3	1.5	0.56	0.23	1.4	1.2	0.26	0.76	0.10	0.85
97AG025	-	7.2	5.9	1.4	5.8	1.2	0.29	0.22	1.4	1.4	0.33	0.99	0.15	0.89
97AG025Z	-	6.8	5.7	1.4	5.6	1.2	0.26	0.20	1.3	1.4	0.32	0.99	0.14	0.89
97AG027	12	12	20	2.5	11	2.4	0.79	0.32	2.2	1.8	0.35	1.0	0.14	1.1
97AG029	-	12	27	4.2	18	4.7	1.3	0.85	5.4	5.5	1.2	3.4	0.46	2.9
97AG031	-	4.7	2.5	0.79	3.4	0.60	0.17	0.11	0.78	0.76	0.19	0.60	0.085	0.52
97AG032A	-	1.6	2.7	0.4	1.3	0.3	0.17	0.091	0.42	0.72	0.20	0.70	0.12	0.90
97AG032B	-	3.9	5.3	0.84	3.2	0.56	0.10	0.089	0.61	0.53	0.11	0.35	0.051	0.82
97AG033	-	10	19	2.8	12	3.0	0.84	0.61	3.6	3.9	0.89	2.6	0.39	2.7
97AG034	1.8	<0.3	<1	<0.3	<0.3	0.07	0.03	0.03	0.14	0.22	0.058	0.19	0.03	0.2
97AG035	-	1.4	27	3.3	13	2.4	0.54	0.33	2.3	1.8	0.35	0.92	0.14	0.87
97AG036A	3.7	4.8	7.7	0.99	4.4	0.85	0.36	0.11	0.77	0.59	0.11	0.32	0.04	0.31
97AG036AZ	3.4	4.8	7.1	0.91	4.0	0.84	0.38	0.13	0.66	0.53	0.10	0.28	0.04	0.26
97AG037	20	21	33	4.3	18	3.7	1.1	0.54	3.4	3.0	0.61	1.7	0.23	1.7
97WRS1	-	15	22	3.3	13	2.9	0.71	0.62	3.6	3.9	0.88	2.7	0.38	2.3
97WRS2	-	9.4	18	2.6	11	2.6	0.66	0.61	3.0	4.7	1.1	3.5	0.54	3.3
BCR-1	40	25	46	6.3	28	6.2	1.8	1.0	6.2	6.1	1.2	3.5	0.45	3.3
BHVO	29	16	34	5.1	24	5.7	1.9	0.94	5.9	5.1	0.96	2.4	0.28	2.0
GXR-2	20	26	45	5.3	20	3.6	0.73	0.50	3.1	2.8	0.59	1.7	0.24	1.8
PPG	110	120	130	21	85	16	1.5	2.6	15	16	3.4	9.8	1.3	9.7
TMB	29	44	85	9.8	40	7.0	1.7	0.81	5.6	4.5	0.90	2.5	0.33	2.5

Table 10. Miscellaneous analytical results for the rock samples of the Fortymile River watershed, Alaska.

Field Number	Ag, ppm	Acid-MS Al, %	Acid-MS As, ppm	GF-AAS Au, ppm	Acid-MS Ba, ppm	Sinter-MS Ba, ppm	Acid-MS Be, ppm	Acid-MS Bi, ppm	Acid-MS Cd, ppm	Acid-MS Ca, %	Acid-MS Cd, ppm	Acid-MS Ce, ppm	Acid-MS Co, ppm	Acid-MS Cr, ppm	Acid-MS Cr, ppm	Sinter-MS Cr, ppm
97AD004	0.14	4.3	0.6	<0.005	520	--	0.7	0.20	1.2	0.1	48	10	47	--	--	
97AD007	0.06	-	<0.5	<0.005	32	--	0.2	<0.05	7.6	<0.1	4.5	40	180	--	--	
97AD007B	0.10	-	2.0	<0.005	120	--	0.6	0.08	4.4	0.3	20	36	55	--	--	
97AD008A	0.10	6.5	<0.5	<0.005	110	120	0.5	<0.05	6.0	0.2	16	52	90	100	--	
97AD008B	0.13	2.2	37.0	0.010	36	--	0.1	<0.05	9.2	0.2	3.3	36	46	--	--	
97AD010	0.17	-	5.0	<0.005	550	--	1.2	0.10	4.6	0.9	42	37	380	--	--	
97AD011	0.04	0.04	<0.5	<0.005	11	--	<0.1	<0.05	<0.1	<0.1	0.1	2	2	--	--	
97AD013	0.04	0.82	22	<0.005	31	--	<0.1	<0.05	0.2	<0.1	0.2	4.1	5	--	--	
97AD016	0.05	-	2.0	<0.005	4300	--	1.0	0.20	2.6	0.1	43	32	22	--	--	
97AD016Z	0.04	-	1.0	0.005	3400	--	0.8	0.10	2.1	0.1	34	26	17	--	--	
97AD025	0.14	7.9	0.5	<0.005	2100	1900	1.1	<0.05	4.9	0.1	39	17	57	63	--	
97AD041	0.06	-	<0.5	<0.005	4700	--	1.3	<0.05	0.8	<0.1	4.8	0.4	3	--	--	
97AD101A	0.16	7.9	0.8	<0.005	190	180	0.6	0.10	6.9	0.2	26	40	340	410	--	
97AD101AZ	0.16	7.9	0.9	<0.005	190	180	0.6	0.10	7.0	0.2	27	40	340	400	--	
97AD101B	<0.02	0.06	<0.5	<0.005	18	--	<0.1	<0.05	<0.05	<0.1	0.1	1	1	--	--	
97AD102	0.03	6.0	0.5	<0.005	26	26	0.3	<0.05	6.2	<0.1	7.7	55	30	33	--	
97AD107	0.05	5.2	2.0	<0.005	2500	2200	0.7	0.76	2.7	0.2	44	16	61	85	--	
97AD108	0.04	7.2	<0.5	<0.005	2800	2500	1.4	<0.05	1.5	<0.1	1.6	0.6	<1	<4	--	
97AD109	0.11	-	1.0	<0.005	1400	1300	1.1	0.40	2.7	0.1	32	10	33	37	--	
97AD114	0.11	-	0.8	<0.005	2500	2300	2.4	<0.05	3.0	<0.1	42	8.9	8	8	--	
97AD116	0.12	8.9	1.0	<0.005	2800	2500	2.0	<0.05	3.5	<0.1	56	9.1	12	12	--	
97AD117	0.03	3.3	3.0	<0.005	1900	1700	0.2	<0.05	8.6	<0.1	27	65	560	740	--	
97AD117Z	0.04	3.1	3.0	<0.005	1800	1600	0.3	<0.05	8.4	<0.1	26	63	570	740	--	
97AD120	0.11	8.8	1.0	<0.005	310	290	0.6	<0.05	5.1	0.2	16	22	39	47	--	
97AG001A	<0.02	0.07	0.5	0.015	29	--	0.1	<0.05	44.0	<0.1	1.5	1.0	<1	--	--	
97AG001B	0.02	0.18	7.8	0.015	70	--	0.2	<0.05	44.0	0.6	8.7	2.0	24	--	--	
97AG001BZ	0.03	0.10	5.5	0.007	47	--	<0.1	<0.05	28.0	0.4	5.5	1.3	15	--	--	
97AG001C	0.02	0.10	2.0	0.010	31	--	<0.1	<0.05	25.0	0.5	2.8	0.8	8	--	--	
97AG002	0.02	9.3	0.5	0.005	88	--	0.1	<0.05	7.1	<0.1	6.0	48	580	--	--	
97AG003	<0.02	0.53	4.0	0.005	82	--	<0.1	<0.05	17.0	0.3	4.8	1.0	13	--	--	
97AG003Z	<0.02	0.52	4.0	0.016	89	--	<0.1	<0.05	17.0	0.4	5.2	1.1	12	--	--	
97AG004	0.08	8.3	3.0	0.006	120	--	0.5	<0.05	6.8	0.1	18	56	140	--	--	
97AG005	0.03	5.7	1.0	0.008	1400	--	0.3	<0.05	8.1	<0.1	7.9	78	170	--	--	
97AG005Z	0.03	5.7	0.9	<0.005	1500	--	0.2	<0.05	7.8	<0.1	7.4	75	170	--	--	
97AG006A	0.11	8.2	1.0	0.006	1300	--	1.4	0.05	1.8	<0.1	51	5.9	17	--	--	
97AG006B	0.07	8.6	0.7	0.012	59	--	0.6	<0.05	7.1	<0.1	21	59	150	--	--	
97AG006C	0.06	6.8	2.0	0.015	84	--	<0.1	0.05	5.4	<0.1	28	42	62	--	--	
97AG007	0.05	-	<0.5	<0.005	460	--	0.4	0.06	7.6	0.1	24	27	93	--	--	
97AG008A	0.02	-	<0.5	0.007	180	--	0.4	0.05	4.4	0.2	16	28	68	--	--	

Note: Acid-MS is an acid digestion with ICP-MS and Sinter-MS is a sodium peroxide sinter with ICP-MS. -- : Not determined.

Table 10. Miscellaneous analytical results for the rock samples of the Fortymile River watershed, Alaska (continued).

Field Number	Acid-MS Cs, ppm	Acid-MS Cu, ppm	Acid-MS Fe, %	Acid-MS Ga, ppm	Acid-MS Ge, ppm	Acid-MS Hg, ppm	CV-AAS Hg, ppm	Sintr-MS Hf, ppm	Acid-MS In, ppm	Acid-MS K, %	Acid-MS La, ppm	Acid-MS Li, ppm	Acid-MS Mg, %	Acid-MS Mn, ppm	Acid-MS Mo, ppm	Acid-MS Mo, ppm
97AD004	1.4	30	2.3	10	0.8	--	0.02	<0.1	1.4	29	12	1.0	490	0.6		
97AD007	0.1	5	6.7	16	1.2	--	<0.02	<0.1	0.11	1.7	7.6	5.6	1300	0.1		
97AD007B	1.0	250	9.0	18	1.5	--	<0.02	0.1	0.37	7.9	18	4.2	1300	9.5		
97AD008A	0.3	53	10	18	1.3	3.2	<0.02	0.1	0.21	6.0	8.2	3.3	1700	0.2		
97AD008B	0.3	340	4.8	5.7	0.6	--	0.08	<0.1	0.05	1.3	6.6	1.0	1000	0.9		
97AD010	3.7	62	4.4	13	1.4	--	0.07	<0.1	1.0	25	31	2.2	940	4.1		
97AD011	<0.1	<3	0.04	<0.1	<0.1	--	<0.02	<0.1	<0.01	<0.1	2	0.01	39	0.3		
97AD013	<0.1	78	1.0	1.5	0.3	--	0.12	<0.1	0.03	<0.1	3	0.13	49	7.0		
97AD016	1.0	9	6.4	8	1.7	--	<0.02	<0.1	0.72	19	28	2.6	2800	0.2		
97AD016Z	0.8	7	5.1	15	1.3	--	<0.02	<0.1	0.60	15	23	2.1	2300	0.3		
97AD025	2.2	20	4.8	16	1.0	2.4	<0.02	<0.1	2.5	23	14	2.0	980	0.6		
97AD041	0.7	<3	0.32	21	0.6	--	0.08	<0.1	2.8	2.7	3	0.13	130	0.2		
97AD101A	0.4	10	7.0	19	1.5	3.3	<0.02	0.1	0.32	12	20	4.8	1200	0.2		
97AD101AZ	0.4	10	7.1	19	1.5	3.4	<0.02	0.1	0.33	12	20	4.9	1100	<0.1		
97AD101B	<0.1	<3	0.04	<0.1	0.2	--	<0.02	<0.1	<0.01	<0.1	1	0.02	27	0.2		
97AD102	0.1	54	1.3	18	1.0	1.8	<0.02	0.1	0.09	2.7	9.4	3.8	1500	0.1		
97AD107	0.7	63	2.7	13	1.0	2.4	<0.02	<0.1	1.7	26	10	0.91	350	3.9		
97AD108	0.8	<3	0.31	18	0.5	1.4	<0.02	<0.1	2.1	0.8	7.0	0.21	84	0.1		
97AD109	1.3	20	3.5	17	0.9	2.6	<0.02	<0.1	1.6	17	8.9	1.3	660	0.7		
97AD114	0.9	7	3.3	18	1.0	2.0	<0.02	<0.1	4.4	22	4	0.92	770	0.4		
97AD116	0.5	8	4.2	20	1.1	3.3	<0.02	<0.1	2.9	27	5.9	1.2	770	0.4		
97AD117	1.9	9	9.5	11	1.1	<0.5	<0.02	<0.1	2.2	13	28	8.0	900	0.1		
97AD117Z	1.8	10	9.3	10	1.2	<0.5	<0.02	<0.1	2.0	13	27	7.7	870	0.1		
97AD120	0.3	30	8.4	16	1.2	<0.5	0.02	<0.1	0.46	7.8	28	3.0	2000	<0.1		
97AG001A	<0.1	<3	0.40	0.1	<0.1	--	<0.02	<0.1	<0.01	1.4	<0.5	0.72	270	0.5		
97AG001B	1.0	4	1.6	0.5	0.2	--	0.16	<0.1	0.04	11	4	0.65	560	3.5		
97AG001BZ	0.8	4	0.98	0.3	0.1	--	0.16	<0.1	0.03	7.3	3	0.40	350	2.3		
97AG001C	0.4	<3	0.40	0.2	<0.1	--	0.03	<0.1	0.01	4.0	2	0.45	91	0.7		
97AG002	0.2	68	6.7	14	1.0	--	<0.02	<0.1	0.22	2.2	17	6.9	1100	0.5		
97AG003	0.9	<3	0.37	1.1	0.2	--	<0.02	<0.1	0.16	6.4	5.0	0.76	76	0.8		
97AG003Z	1.0	<3	0.38	1.1	0.2	--	0.02	<0.1	0.16	6.9	5.1	1.1	80	0.8		
97AG004	0.8	44	1.2	22	1.5	--	<0.02	0.1	0.38	6.8	18	4.5	1800	0.2		
97AG005	2.5	150	10	12	1.3	--	<0.02	<0.1	1.9	3.0	6.4	7.8	950	0.1		
97AG005Z	2.6	150	10	12	1.2	--	<0.02	<0.1	2.0	2.8	6.8	7.5	920	0.1		
97AG006A	1.5	6	2.1	16	1.0	--	<0.02	<0.1	1.3	32	5.1	1.2	480	0.3		
97AG006B	0.3	56	12	24	2.2	--	<0.02	0.2	0.21	11	13	3.3	1800	0.2		
97AG006C	0.2	20	12	18	1.4	--	0.04	0.1	0.12	11	3	2.3	1300	0.2		
97AG007	0.9	10	5.6	16	1.3	--	<0.02	<0.1	0.75	13	9.8	2.9	950	<0.1		
97AG008A	0.5	47	5.7	16	1.2	--	<0.02	<0.1	0.46	9.1	14	3.4	880	0.1		

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Mo, ppm	Sintr-MS Na, %	Acid-MS Nb, ppm	Acid-MS Ni, ppm	Sintr-MS Nb, ppm	Acid-MS Ni, ppm	P, %	Acid-MS Pb, ppm	Acid-MS Rb, ppm	Acid-MS Rb, ppm	Sintr-MS Rb, ppm	Acid-MS Sb, ppm	Acid-MS Sc, ppm	Sintr-MS Sc, ppm	Sintr-MS Sn, ppm
97AD004	--	0.74	9.0	--	28	0.06	14	51	--	--	0.3	6.5	--	--	--
97AD007	--	2.2	3.6	--	62	0.02	0.8	3.0	--	--	0.6	44	--	--	--
97AD007B	--	3.4	5.0	--	32	0.08	5.0	15	--	--	0.6	41	--	--	--
97AD008A	0.66	2.3	5.0	4.2	50	0.10	2.3	5.8	5.5	--	0.3	46	41	1	--
97AD008B	--	0.74	1.3	--	24	0.02	3.9	1.6	--	--	1.9	15	--	--	--
97AD010	--	2.3	8.4	--	140	0.13	7.6	35	--	--	3.6	32	--	--	--
97AD011	--	<0.01	<0.1	--	0.1	<0.01	0.8	<0.1	--	--	<0.1	<0.5	--	--	--
97AD013	--	0.50	<0.1	--	7.2	<0.01	1.3	1.1	--	--	3.8	0.6	--	--	--
97AD016	--	2.9	3.1	--	70	0.06	13	22	--	--	0.2	30	--	--	--
97AD016Z	--	2.4	2.7	--	56	0.05	10	18	--	--	0.2	24	--	--	--
97AD025	0.96	2.4	11	7.7	14	0.14	8.7	63	59	--	<0.1	17	32	0.9	--
97AD041	--	5.8	5.8	--	1.1	<0.01	19	38	--	--	<0.1	2	--	--	--
97AD101A	<0.3	2.2	14	11	170	0.11	6.1	10	9.2	--	0.6	33	34	2	--
97AD101AZ	1.3	2.3	14	11	170	0.11	6.0	10	9.4	--	0.6	33	34	2	<0.5
97AD101B	--	0.02	<0.1	--	0.3	<0.01	0.2	0.2	--	--	<0.1	<0.5	--	--	--
97AD102	0.3	1.8	2.4	2.4	28	0.03	0.9	1.4	1.3	--	0.3	51	40	1	--
97AD107	3.3	0.42	4.0	11	24	0.04	21	62	57	--	0.4	12	35	1	--
97AD108	<0.3	3.8	2.6	1.3	0.8	<0.01	16	41	46	--	<0.1	0.5	31	<0.5	--
97AD109	0.70	3.5	9.4	6.8	9.2	0.09	43	76	75	--	<0.1	16	34	0.9	--
97AD114	0.4	3.6	10	7.2	6.2	0.14	21	92	97	--	0.1	7.3	29	1	--
97AD116	0.3	3.3	11	7.5	5.5	0.15	14	62	60	--	0.2	14	32	2	--
97AD117	0.4	0.28	2.0	2.8	190	0.54	1.8	100	110	--	<0.1	47	40	0.6	--
97AD117Z	0.4	0.28	3.2	2.7	180	0.58	1.6	99	100	--	<0.1	46	41	0.9	--
97AD120	0.3	2.9	10	8.2	8.9	0.16	3.5	14	14	--	0.5	34	40	<0.5	--
97AG001A	--	0.02	<0.1	--	20	<0.01	1.8	0.3	--	--	0.7	<0.5	--	--	--
97AG001B	--	<0.01	0.6	--	39	0.03	2.2	1.7	--	--	10	1	--	--	--
97AG001BZ	--	<0.01	0.2	--	26	0.02	1.4	1.3	--	--	5.6	0.6	--	--	--
97AG001C	--	<0.01	0.2	--	16	0.01	0.5	0.7	--	--	1.6	<0.5	--	--	--
97AG002	--	2.2	1.0	--	190	0.03	2.5	3.6	--	--	0.2	36	--	--	--
97AG003	--	0.08	0.5	--	14	0.02	2.1	6.6	--	--	0.5	0.9	--	--	--
97AG003Z	--	0.07	0.3	--	15	0.02	-	2.2	6.9	--	--	0.5	0.9	--	--
97AG004	--	2.6	6.1	--	66	0.11	1.8	10	--	--	0.3	49	--	--	--
97AG005	--	0.72	1.0	--	64	0.04	3.7	63	--	--	0.2	84	--	--	--
97AG005Z	--	0.68	0.9	--	62	0.03	3.8	66	--	--	0.2	80	--	--	--
97AG006A	--	3.3	10	--	9.5	0.04	14	43	--	--	0.1	8.3	--	--	--
97AG006B	--	2.1	5.4	--	60	0.12	1.7	34	--	--	0.5	52	--	--	--
97AG006C	--	1.6	3.8	--	43	0.08	4.3	2.3	--	--	0.4	31	--	--	--
97AG007	--	3.6	4.8	--	35	0.09	7.4	20	--	--	0.1	27	--	--	--
97AG008A	--	4.2	1.6	--	32	0.06	4.3	9.3	--	--	0.1	25	--	--	--

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Acid-MS Sr, ppm	Sintr-MS Sr, ppm	Sintr-MS Ta, ppm	Acid-MS Th, ppm	Sintr-MS Ti %	Acid-MS Ti, ppm	Combust-IR Total S, %	Acid-MS U, ppm	Acid-MS V, ppm	Sintr-MS W, ppm	Acid-MS Y, ppm	Acid-MS Zn, ppm	Sintr-MS Zr, ppm
97AD004	71	--	--	9.4	--	0.2	0.06	1.9	77	--	15	61	--
97AD007	110	--	--	0.3	--	<0.1	<0.03	<0.05	220	--	23	63	--
97AD007B	98	--	--	0.69	--	0.1	0.89	0.4	320	--	64	100	--
97AD008A	140	170	0.3	0.4	1.4	<0.1	<0.03	0.71	300	0.65	61	120	--
97AD008B	75	--	--	0.07	--	<0.1	1.38	0.09	130	--	18	32	--
97AD010	120	--	--	3.0	--	0.2	1.03	3.2	230	--	35	220	--
97AD011	0.7	--	--	<0.05	--	<0.1	<0.03	<0.05	<1	--	0.2	<3	--
97AD013	16	--	--	<0.05	--	<0.1	<0.03	0.05	6	--	0.3	<3	--
97AD016	240	--	--	4.1	--	0.2	0.03	2.0	200	--	38	140	--
97AD016Z	190	--	--	3.2	--	0.2	0.03	1.6	160	--	30	110	--
97AD025	840	990	0.5	5.8	0.4	0.3	<0.03	1.0	160	<0.1	25	80	--
97AD041	680	--	--	1.7	--	0.4	0.09	0.51	19	--	3.9	20	--
97AD101A	280	330	0.71	1.4	1.1	<0.1	<0.03	0.50	170	0.2	46	90	--
97AD101AZ	280	320	0.68	1.5	1.1	<0.1	<0.03	0.52	180	0.2	47	92	--
97AD101B	1	--	--	<0.05	--	<0.1	<0.03	<0.05	<1	--	<0.1	<3	--
97AD102	64	84	0.2	0.2	2.6	<0.1	<0.03	0.06	540	<0.1	38	110	--
97AD107	70	88	0.75	8.3	0.3	0.2	0.45	2.1	150	0.90	24	44	--
97AD108	700	850	<0.2	0.2	0.04	0.3	<0.03	0.50	7	<0.1	1.3	39	--
97AD109	200	240	0.50	5.0	0.5	0.4	0.05	1.7	75	<0.1	27	88	--
97AD114	1300	1500	0.60	3.0	0.3	0.3	<0.03	2.5	100	<0.1	21	65	--
97AD116	1100	1300	0.3	1.6	0.4	0.2	<0.03	0.50	140	<0.1	33	78	--
97AD117	180	220	0.3	1.4	0.9	<0.1	<0.03	0.4	250	<0.1	13	58	--
97AD117Z	180	220	0.3	1.3	0.9	<0.1	<0.03	0.4	250	<0.1	13	57	--
97AD120	220	270	0.53	0.3	1.0	<0.1	<0.03	0.2	140	<0.1	23	120	--
97AG001A	390	--	--	0.09	--	<0.1	0.05	1.0	8	--	5.0	10	--
97AG001B	380	--	--	0.85	--	<0.1	0.38	3.5	15	--	22	92	--
97AG001BZ	250	--	--	0.4	--	<0.1	0.39	2.2	11	--	14	64	--
97AG001C	250	--	--	0.2	--	<0.1	0.18	1.7	7	--	9.9	30	--
97AG002	79	--	--	0.4	--	<0.1	<0.03	0.2	210	--	26	66	--
97AG003	220	--	--	0.78	--	<0.1	0.10	1.7	15	--	10	20	--
97AG003Z	230	--	--	0.78	--	<0.1	0.10	1.9	16	--	11	20	--
97AG004	80	--	--	0.5	--	<0.1	0.13	0.1	450	--	65	130	--
97AG005	290	--	--	0.4	--	0.5	0.17	0.4	500	--	9.5	57	--
97AG005Z	280	--	--	0.3	--	0.5	0.17	0.4	470	--	9.0	57	--
97AG006A	270	--	--	1.2	--	0.2	0.10	4.3	45	--	17	49	--
97AG006B	210	--	--	0.60	--	<0.1	<0.03	0.67	500	--	72	170	--
97AG006C	430	--	--	1.3	--	<0.1	3.79	0.4	220	--	63	96	--
97AG007	500	--	--	2.8	--	<0.1	<0.03	0.83	210	--	17	65	--
97AG008A	440	--	--	1.5	--	<0.1	<0.03	0.5	210	--	16	63	--

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Ag, ppm	Acid-MS Al, %	Acid-MS As, ppm	GF-AAS Au, ppm	Acid-MS Ba, ppm	SIntr-MS Ba, ppm	Acid-MS Be, ppm	SIntr-MS Ca, %	Acid-MS Cd, ppm	Acid-MS Ce, ppm	Acid-MS Co, ppm	Acid-MS Cr, ppm	SIntr-MS Cr, ppm
97AG008B	0.06	-	<0.5	<0.005	730	--	0.4	<0.05	4.3	<0.1	25	30	73
97AG008C	<0.02	-	<0.5	<0.005	210	--	0.6	<0.05	3.3	<0.1	2.7	6.4	8
97AG009	0.24	8.9	0.6	0.044	2000	--	1.2	1.10	0.4	1.6	39	2.4	2
97AG010A	0.22	7.8	0.7	0.014	2100	--	0.5	<0.05	6.2	0.1	19	5.8	8
97AG010B	0.15	-	0.7	0.024	2400	--	1.1	<0.05	4.3	<0.1	46	16	17
97AG011	0.18	5.3	100	0.012	7800	--	0.7	<0.05	2.4	0.5	26	6.2	84
97AG012	0.17	3.0	1.0	0.008	1100	--	0.4	<0.05	12.0	0.2	18	7.0	51
97AG013	0.35	6.3	25.0	0.005	1100	--	0.8	<0.05	2.6	0.1	22	6.2	29
97AG014A	0.12	4.4	2.0	0.012	4500	--	0.6	0.10	1.0	<0.1	26	11	32
97AG014B	0.12	7.6	0.6	0.013	3600	--	0.9	0.09	1.2	0.1	21	7.9	27
97AG015	0.03	5.2	2.0	0.022	3100	3000	0.5	<0.05	0.1	<0.1	0.1	0.1	<4
97AG017	0.08	0.49	1.0	0.012	440	--	<0.1	0.08	<0.05	<0.1	1.1	0.8	<1
97AG018	0.07	-	<0.5	0.022	1200	1200	0.5	<0.05	3.7	<0.1	24	22	37
97AG018A	0.11	-	<0.5	<0.005	1200	--	0.3	<0.05	3.8	<0.1	27	29	37
97AG019A	0.13	8.7	15	<0.005	1200	--	0.9	0.05	0.6	<0.1	43	5.9	29
97AG019B	0.13	-	<0.5	<0.005	890	--	0.8	<0.05	1.4	<0.1	51	18	17
97AG020	0.10	7.6	3.0	<0.005	2000	1800	1.4	0.05	3.5	<0.1	36	14	9
97AG021	0.26	4.4	0.7	<0.005	1000	--	0.5	0.09	1.9	0.1	14	2.5	19
97AG022	0.22	4.2	<0.5	<0.005	700	--	0.6	0.10	1.0	0.1	22	3.8	38
97AG023	0.14	6.2	<0.5	<0.005	2600	--	0.8	0.10	1.5	<0.1	36	15	48
97AG023Z	0.08	6.4	<0.5	<0.005	2700	--	1.1	0.10	1.6	<0.1	36	15	50
97AG024	0.10	8.0	0.7	<0.005	2000	1800	1.2	0.06	2.4	<0.1	19	1.7	2
97AG025	0.05	0.81	0.5	<0.005	300	--	0.1	<0.05	23.0	0.2	5.9	2.0	--
97AG025Z	0.04	0.76	<0.5	<0.005	290	--	0.1	<0.05	22.0	0.2	5.7	1.8	10
97AG027	0.12	8.7	<0.5	<0.005	1500	1300	1.6	0.08	3.7	<0.1	28	7.7	7
97AG029	0.12	5.8	2.0	<0.005	78	--	0.9	<0.05	3.1	0.1	27	16	4
97AG031	<0.02	0.25	0.9	<0.005	66	--	<0.1	<0.05	35.0	0.1	2.5	1.4	--
97AG032A	0.07	6.0	23	<0.005	280	--	0.9	0.20	0.7	<0.1	2.7	1.7	67
97AG032B	0.11	2.0	25	0.008	290	--	0.6	0.20	0.2	<0.1	5.3	2.6	22
97AG033	0.11	4.8	1.0	<0.005	1700	--	0.6	0.06	2.9	<0.1	19	10	17
97AG034	<0.02	0.54	2.0	0.007	6	7.7	<0.1	<0.05	3.3	<0.1	0.1	78	1500
97AG035	0.12	4.0	9.3	0.007	1700	--	0.6	0.09	0.3	<0.1	27	8.6	45
97AG036A	0.05	7.1	<0.5	<0.005	2000	1800	0.6	<0.05	2.3	<0.1	7.6	2.2	4
97AG036AZ	0.05	7.1	<0.5	<0.005	2000	1900	0.7	<0.05	2.2	<0.1	7.3	2.0	4
97AG037	0.09	7.3	3.0	<0.005	2000	1900	1.1	0.06	4.9	0.1	39	21	58
97WRS1	0.07	2.8	3.0	0.007	350	--	0.6	0.09	6.5	0.1	22	2.2	15
97WRS2	0.14	6.2	0.6	<0.005	2200	--	0.8	0.10	0.5	<0.1	18	3.2	23

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Acid-MS Cs, ppm	Acid-MS Cu, ppm	Acid-MS Fe, %	Acid-MS Ga, ppm	Acid-MS Ge, ppm	Sintr-MS Hf, ppm	CV-AAS Hg, ppm	Acid-MS In, ppm	Acid-MS La, ppm	Acid-MS K, %	Acid-MS Li, ppm	Acid-MS Mg, %	Acid-MS Mn, ppm	Acid-MS Mo, ppm	Acid-MS Mo, ppm
97AG008B	1.3	48	6.2	19	1.3	--	<0.02	2.1	13	19	3.8	780	<0.1		
97AG008C	0.7	10	1.4	11	0.7	--	0.04	<0.1	0.67	1.4	5.8	0.80	260	0.1	
97AG009	1.3	50	3.1	20	1.0	--	0.04	0.1	5.0	22	1.3	1.3	600	4.8	
97AG010A	1.8	20	2.1	14	0.9	--	<0.02	<0.1	4.7	10	5.0	2.8	590	1.1	
97AG010B	2.5	9	5.1	21	1.2	--	<0.02	<0.1	2.4	28	12	1.6	930	0.4	
97AG011	1.5	110	1.9	12	0.9	--	0.04	<0.1	2.0	18	9.4	1.2	230	9.8	
97AG012	1.6	38	1.8	6.5	0.6	--	<0.02	<0.1	0.64	17	5.1	0.88	590	8.1	
97AG013	1.5	140	3.3	14	1.3	--	0.03	<0.1	1.9	14	17	0.82	350	10	
97AG014A	5.5	56	3.0	11	1.2	--	<0.02	<0.1	1.2	13	25	1.7	370	1.0	
97AG014B	5.0	30	2.7	14	1.0	--	0.02	<0.1	1.8	13	22	1.3	380	1.8	
97AG015	2.7	<3	0.18	15	0.6	0.77	0.66	<0.1	4.1	<0.1	23	0.05	14	0.3	
97AG017	0.1	53	3.6	1.6	0.6	--	0.02	<0.1	0.22	1.6	7.8	0.03	65	1.5	
97AG018	5.2	40	5.5	16	1.2	1.3	<0.02	<0.1	2.8	12	27	2.2	800	0.2	
97AG018A	5.9	55	6.7	19	1.6	--	<0.02	<0.1	2.9	14	25	2.6	920	0.1	
97AG019A	2.0	30	2.6	13	0.9	--	0.09	<0.1	2.5	27	11	0.98	420	2.1	
97AG019B	10	50	6.5	19	1.1	--	<0.02	<0.1	3.0	29	28	2.1	1500	0.5	
97AG020	6.6	8	4.9	16	0.9	1.6	<0.02	<0.1	2.7	21	59	1.7	900	0.7	
97AG021	3.5	8	0.93	8.2	0.6	0.6	0.02	<0.1	1.1	8.9	30	1.2	150	1.4	
97AG022	1.4	20	1.5	9.4	1.0	0.6	0.02	<0.1	0.76	15	18	1.0	150	2.2	
97AG023	2.7	60	4.0	16	1.3	<0.5	<0.02	<0.1	1.9	17	29	1.6	1100	0.5	
97AG023Z	2.7	63	4.1	16	1.3	<0.5	<0.02	<0.1	1.9	18	29	1.6	1200	0.8	
97AG024	1.8	3	1.3	16	0.9	1.4	<0.02	<0.1	2.2	12	16	0.78	470	0.3	
97AG025	0.5	10	0.55	1.9	0.2	<0.5	0.02	<0.1	0.19	7.2	4	0.69	220	0.6	
97AG025Z	0.5	8	0.51	1.8	0.2	<0.5	<0.02	<0.1	0.18	6.8	4	0.64	210	0.5	
97AG027	1.9	<3	3.0	18	0.8	2.2	<0.02	<0.1	2.1	16	14	0.93	710	0.2	
97AG029	0.1	36	6.3	13	1.4	<0.5	<0.02	<0.1	0.35	12	4	1.4	1300	0.2	
97AG031	0.3	<3	0.45	0.6	<0.1	<0.5	<0.02	<0.1	0.12	4.7	2	1.8	170	0.3	
97AG032A	3.7	9	2.3	14	1.2	<0.5	0.06	<0.1	1.4	1.6	38	0.70	100	2.3	
97AG032B	0.9	10	1.4	4.5	0.7	<0.5	0.03	<0.1	1.4	3.9	5.4	0.17	37	14	
97AG033	2.4	61	2.6	11	0.8	<0.5	<0.02	<0.1	0.95	10	20	1.7	260	0.9	
97AG034	0.1	9	4.2	1.0	0.7	<0.5	0.03	<0.1	<0.01	<0.1	4	17	650	0.2	
97AG035	3.0	44	2.3	12	0.8	<0.5	<0.02	<0.1	2.1	14	7.7	1.2	860	0.4	
97AG036A	0.6	<3	1.2	18	0.6	1.4	<0.02	<0.1	1.4	4.1	7.5	0.79	200	<0.1	
97AG036AZ	0.6	<3	1.1	18	0.5	1.0	<0.02	<0.1	1.4	3.9	7.4	0.77	200	<0.1	
97AG037	1.1	20	5.2	15	1.0	1.4	<0.02	<0.1	2.6	23	13	2.5	1000	0.9	
97WRS1	4.8	8	1.3	6.6	0.5	<0.5	0.03	<0.1	0.49	15	42	0.56	720	1.2	
97WRS2	13	20	3.4	14	0.9	0.8	0.09	<0.1	2.4	9.4	38	1.2	400	1.3	

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Sintr-MS Mo, ppm	Acid-MS Na, %	Acid-MS Nb, ppm	Sintr-MS Nb, ppm	Acid-MS Ni, ppm	P, %	Acid-MS Pb, ppm	Acid-MS Rb, ppm	Sintr-MS Rb, ppm	Sintr-MS Re, ppm	Acid-MS Sb, ppm	Acid-MS Sc, ppm	Sintr-MS Sc, ppm	Sintr-MS Sn, ppm
97AG008B	--	4.9	4.6	--	32	0.07	3.2	40	--	--	0.1	28	--	--
97AG008C	--	5.5	0.2	--	7.0	0.02	5.3	15	--	--	0.1	4	--	--
97AG009	--	1.0	12	--	1.2	0.05	1700	96	--	--	0.6	11	--	--
97AG010A	--	1.9	14	--	7.1	0.08	14	160	--	--	<0.1	6.4	--	--
97AG010B	--	3.1	13	--	8.4	0.16	10	69	--	--	0.1	14	--	--
97AG011	--	1.3	7.8	--	42	0.17	6.6	45	--	--	1.6	9.3	--	--
97AG012	--	0.60	5.2	--	32	0.08	3.8	18	--	--	<0.1	6.9	--	--
97AG013	--	1.5	15	--	20	0.09	7.1	86	--	--	4.2	11	--	--
97AG014A	--	0.96	2.8	--	33	0.03	7.6	41	--	--	0.6	13	--	--
97AG014B	--	1.6	4.8	--	17	0.05	10	50	--	--	<0.1	14	--	--
97AG015	< 0.3	3.5	2.2	1.9	0.1	< 0.01	19	87	96	--	1.9	< 0.5	38	< 0.5
97AG017	--	0.26	0.7	--	0.6	< 0.01	3.5	4.1	--	--	0.6	< 0.5	--	--
97AG018	0.4	3.0	6.8	5.4	20	0.09	5.6	92	94	--	0.1	24	37	0.5
97AG018A	--	3.5	7.3	--	25	0.13	6.6	89	--	--	0.1	26	--	--
97AG019A	--	3.8	9.5	--	12	0.05	5.3	51	--	--	1.0	9.9	--	--
97AG019B	--	6.0	9.3	--	6.9	0.22	8.8	96	--	--	0.2	26	--	--
97AG020	1.4	2.3	9.6	7.7	50	0.14	8.8	98	96	--	0.5	16	39	0.8
97AG021	--	1.3	2.4	--	13	0.04	7.3	32	--	< 0.05	< 0.1	7.5	--	0.9
97AG022	--	0.68	0.6	--	26	0.04	8.6	28	--	< 0.05	< 0.1	8.4	--	1
97AG023	--	1.2	3.0	--	29	0.07	11	61	--	< 0.05	< 0.1	18	--	2
97AG023Z	--	1.2	3.1	--	29	0.07	10	62	--	< 0.05	< 0.1	18	--	2
97AG024	< 0.3	2.8	10	6.8	1.9	0.03	15	71	69	--	0.1	3	38	< 0.5
97AG025	--	0.17	0.8	--	20	0.03	25	6.6	--	< 0.05	< 0.1	2	--	20
97AG025Z	--	0.16	0.8	--	19	0.03	3.2	6.2	--	< 0.05	< 0.1	2	--	< 0.5
97AG027	< 0.3	2.8	11	7.7	4.1	0.08	13	71	69	--	< 0.1	7.8	37	0.7
97AG029	--	3.4	8.6	--	3.9	0.17	5.8	4.1	--	< 0.05	0.1	25	--	0.9
97AG031	--	0.02	< 0.1	--	22	0.03	1.7	3.8	--	< 0.05	< 0.1	0.6	--	< 0.5
97AG032A	--	0.89	1.0	--	10	0.04	26	75	--	< 0.05	3.5	12	--	2
97AG032B	--	0.16	1.0	--	14	0.02	4.2	46	--	< 0.05	2.9	3	--	1
97AG033	--	0.87	2.6	--	14	0.08	5.6	27	--	< 0.05	0.1	15	--	0.9
97AG034	0.3	0.09	0.1	< 0.2	1700	< 0.01	1.0	0.2	0.4	--	0.5	7.0	28	< 0.5
97AG035	--	0.31	6.4	--	21	0.02	9.6	65	--	< 0.05	< 0.1	9.7	--	1
97AG036A	< 0.3	3.4	4.9	3.2	2.6	0.04	11	30	40	--	< 0.1	2	39	< 0.5
97AG036AZ	< 0.3	3.4	4.6	3.3	2.4	0.04	11	31	42	--	< 0.1	2	38	< 0.5
97AG037	0.90	2.2	8.8	6.9	25	0.16	9.9	70	72	--	0.6	17	39	0.6
97NRS1	--	0.29	2.7	--	13	0.02	1.4	26	--	< 0.05	2.4	6.1	--	0.9
97NRS2	--	0.85	6.0	--	5.8	0.04	8.5	95	--	< 0.05	0.6	15	--	1

Table 10. Miscellaneous analytical results for the rock samples of the Forty-mile River watershed, Alaska (continued).

Field Number	Acid-MS Sr, ppm	Sintr-MS Sr, ppm	Sintr-MS Ta, ppm	Acid-MS Th, ppm	Sintr-MS Ti %	Acid-MS Ti, ppm	Combust-IR Total S, %	Acid-MS U, ppm	Acid-MS V, ppm	Sintr-MS W, ppm	Acid-MS Y, ppm	Acid-MS Zn, ppm	Sintr-MS Zr, ppm
97AG008B	270	--	--	2.5	--	0.2	<0.03	0.63	210	--	24	73	--
97AG008C	470	--	--	0.2	--	<0.1	<0.03	0.3	88	--	2.7	10	--
97AG009	84	--	--	10	--	0.5	0.63	3.2	36	--	18	240	--
97AG010A	740	--	--	6.4	--	0.6	<0.03	6.4	75	--	19	47	--
97AG010B	930	--	--	9.9	--	0.4	<0.03	5.1	190	--	25	97	--
97AG011	430	--	--	4.8	--	0.5	0.55	5.5	160	--	28	89	--
97AG012	350	--	--	2.9	--	0.1	0.37	6.3	87	--	26	62	--
97AG013	750	--	--	3.2	--	1.0	1.86	4.7	140	--	25	58	--
97AG014A	130	--	--	3.3	--	0.3	0.43	0.99	62	--	17	64	--
97AG014B	220	--	--	8.6	--	0.2	0.72	2.2	120	--	15	83	--
97AG015	230	360	<0.2	<0.05	0.05	0.6	0.04	0.2	7	0.4	0.3	7	--
97AG017	35	--	--	0.1	--	<0.1	0.24	0.4	8	--	1.6	4	--
97AG018	280	340	0.4	1.3	0.6	0.4	<0.03	0.4	160	<0.1	21	69	--
97AG018A	290	--	--	1.7	--	0.5	<0.03	0.50	230	--	23	88	--
97AG019A	140	--	--	19	--	0.3	0.39	4.0	90	--	13	58	--
97AG019B	250	--	--	5.6	--	0.9	0.13	1.6	180	--	35	110	--
97AG020	830	970	0.5	8.2	0.4	0.5	0.07	3.4	170	0.3	23	75	--
97AG021	150	--	0.2	2.8	0.1	0.3	0.53	1.5	61	0.4	11	48	49
97AG022	140	--	0.1	4.6	0.04	0.2	0.97	2.2	54	0.4	12	70	48
97AG023	320	--	0.2	5.3	0.3	0.3	0.04	1.2	120	0.4	26	88	9.3
97AG023Z	320	--	0.2	5.6	0.3	0.2	0.04	1.3	120	0.4	24	85	7.8
97AG024	960	1100	0.61	3.2	0.1	0.4	0.07	2.6	28	<0.1	11	36	--
97AG025	350	--	<0.1	0.86	0.04	<0.1	0.10	1.5	16	<0.1	12	20	13
97AG025Z	340	--	<0.1	0.90	0.04	<0.1	0.10	1.5	15	<0.1	12	20	13
97AG027	960	1100	0.51	3.0	0.3	0.4	<0.03	1.6	68	<0.1	14	58	--
97AG029	72	--	0.4	2.5	0.9	<0.1	<0.03	0.69	210	<0.1	29	89	13
97AG031	320	--	<0.1	0.4	0.01	<0.1	0.05	1.9	9	<0.1	8.7	8	3.2
97AG032A	89	--	0.2	5.8	0.07	0.4	0.37	1.4	82	0.4	5.7	47	34
97AG032B	13	--	<0.1	2.2	0.04	0.2	0.79	0.4	34	2.4	3.4	10	12
97AG033	290	--	0.2	2.2	0.3	0.1	0.71	1.6	94	0.4	23	62	38
97AG034	14	19	<0.2	<0.05	0.03	<0.1	0.09	0.1	43	<0.1	1.9	32	--
97AG035	77	--	0.4	5.8	0.3	0.4	<0.03	1.4	66	0.5	7.6	59	27
97AG036A	1100	1400	0.2	0.98	0.1	0.2	<0.03	0.2	26	<0.1	3.4	30	--
97AG036AZ	1100	1400	0.2	0.83	0.1	0.2	<0.03	0.2	26	<0.1	3.3	30	--
97AG037	850	1000	0.50	5.2	0.4	0.3	<0.03	2.8	170	0.1	22	77	--
97WRS1	160	--	0.2	3.3	0.1	0.2	0.08	1.2	38	0.2	25	39	20
97WRS2	130	--	0.4	5.1	0.3	0.5	0.05	2.5	100	0.7	26	44	72

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska. (All values are expressed on a dry-weight basis.)

Field Number	Ag, ppm	Al, %	As, ppm	Ash, %	Ba, ppm	Be, ppm	Ba, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm	Cs, ppm	Cu, ppm	Fe, %
97AK01A	0.02	0.60	0.9	17.03	107	0.1	0.02	3.41	0.58	4	1	6	6	6	6	0.22
97AK01AX	0.03	1.02	1.3	21.72	239	0.2	0.02	3.91	0.37	8	3	11	6	6	13	0.59
97AK01AZ	0.01	0.63	0.9	16.94	110	0.1	0.02	3.56	0.63	4	2	7	6	6	6	0.24
97AK01B	0.04	2.46	2.5	49.22	300	0.4	0.05	8.37	1.48	15	3	12	10	15	15	0.54
97AK01BX	0.07	3.29	4.2	59.79	658	0.7	0.06	4.72	0.30	25	7	26	17	22	22	1.79
97AK01C	0.08	3.32	5.1	92.22	424	0.9	0.09	14.8	1.66	31	7	40	30	30	18	1.11
97AK01CX	0.11	4.47	6.7	93.10	912	0.8	0.09	7.26	0.28	36	9	39	19	28	28	2.51
97AK01CXZ	0.10	4.46	6.9	93.02	893	0.8	0.09	6.98	0.28	39	10	40	20	20	29	2.60
97AK02A	0.06	0.74	0.7	13.22	304	0.2	0.03	0.74	0.15	8	3	5	<1	10	10	0.44
97AK02AX	0.09	0.91	0.9	17.47	349	0.2	0.03	0.94	0.26	6	3	9	1	7	7	0.47
97AK02B	0.16	4.47	3.0	58.02	812	0.9	0.06	1.74	0.12	30	6	24	2	12	12	1.97
97AK02BX	0.14	4.86	5.7	68.41	889	0.8	0.14	1.30	0.14	41	7	44	3	21	21	2.53
97AK02BZ	0.10	4.15	3.1	57.70	808	0.7	0.06	1.62	0.12	27	5	24	2	12	12	1.90
97AK02C	0.17	7.26	5.8	94.32	1420	1.0	0.09	2.74	0.00	34	11	56	2	9	9	3.87
97AK02CX	0.13	5.60	5.6	82.31	988	1.2	0.16	1.65	0.16	47	7	38	3	16	16	2.72
97AK03A	0.05	1.94	3.6	30.29	333	0.4	0.06	3.94	0.30	13	4	16	1	17	17	1.03
97AK03B	0.10	4.40	5.7	57.13	628	0.7	0.11	3.20	0.11	36	6	38	2	21	21	2.11
97AK03C	0.19	6.26	101	84.57	930	1.1	0.17	2.37	0.25	50	12	60	3	28	28	3.21
97AK04A	0.09	2.99	4.0	39.87	558	0.6	0.12	0.88	0.96	28	5	35	1	12	12	1.63
97AK04B	0.15	5.31	8.5	70.78	991	1.1	0.21	1.49	0.71	55	12	67	3	26	26	3.11
97AK04C	0.19	6.27	10.0	90.85	1180	1.3	0.18	1.64	0.09	65	13	64	4	18	18	3.45
97AK05A	0.14	4.50	5.1	67.16	1080	0.9	0.13	1.54	0.54	39	9	38	4	26	26	2.62
97AK05B	0.14	4.25	3.9	72.04	1010	1.0	0.07	1.37	0.50	32	9	39	3	25	25	2.38
97AK05BZ	0.15	4.19	3.8	71.00	923	0.7	0.07	1.35	0.50	34	9	37	3	21	21	2.27
97AK05C	0.19	5.71	5.7	86.51	1210	1.6	0.17	1.12	0.43	48	11	55	4	28	28	3.20
97AK06A	0.03	1.02	1.3	23.11	201	0.2	0.02	3.70	0.25	8	3	8	1	11	11	0.35
97AK06AX	0.02	0.57	1.1	27.08	176	0.1	0.02	7.31	0.24	5	2	4	<1	11	11	0.22
97AK06B	0.08	3.48	4.4	57.02	627	0.5	0.06	3.42	0.17	29	7	27	1	21	21	1.82
97AK06BX	0.07	2.92	4.4	58.35	642	0.6	0.06	4.38	0.18	22	6	26	1	20	20	1.58
97AK06C	0.12	4.68	6.4	76.78	921	1.2	0.15	2.84	0.23	40	9	42	2	34	34	2.46
97AK06CX	0.12	4.82	5.7	87.57	1140	0.9	0.18	1.75	0.18	39	8	42	2	29	29	2.36
97AK06CZ	0.13	4.39	5.6	76.93	923	0.7	0.15	2.77	0.23	38	8	42	2	30	30	2.31
97AK07A	0.28	1.40	1.2	21.51	301	0.2	0.04	0.67	0.52	11	3	12	1	9	9	0.69
97AK07B	0.26	5.19	6.2	70.15	842	0.8	0.14	1.19	0.28	39	8	52	2	27	27	2.67
97AK07BZ	0.21	5.17	6.2	69.92	839	0.6	0.14	1.12	0.28	38	8	53	2	26	26	2.66
97AK07C	0.19	6.45	8.7	88.34	972	1.1	0.18	1.41	0.18	47	14	57	3	28	28	3.45
97AK08A	0.06	1.88	1.6	31.31	376	0.4	0.03	0.63	0.28	13	3	13	1	6	6	0.88

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska (continued).

Field Number	Ga, ppm	Ge, ppm	Hg, ppm	In, ppm	K, %	La, ppm	Mg, %	Mn, ppm	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm
97AK01A	1	0.1	0.13	<0.1	0.15	2	2	0.27	165	0.5	0.13	0.4	5	0.07
97AK01AX	2	0.2	0.16	<0.1	0.21	5	4	0.28	239	0.5	0.18	1.2	9	0.08
97AK01AZ	1	0.1	0.15	<0.1	0.16	2	2	0.27	169	0.5	0.14	0.2	6	0.07
97AK01B	5	0.4	0.11	<0.1	0.54	10	9	0.79	310	0.9	0.74	2.0	11	0.10
97AK01BX	7	0.7	0.10	<0.1	0.60	15	15	0.66	419	0.5	0.60	3.0	18	0.07
97AK01C	7	0.9	0.14	<0.1	0.61	22	18	2.95	258	0.5	0.63	4.5	28	0.08
97AK01CX	9	1.1	0.09	<0.1	0.88	21	22	0.91	326	0.6	0.89	7.0	25	0.05
97AK01CXZ	10	1.1	0.09	<0.1	0.88	22	22	0.91	335	0.6	0.92	7.1	26	0.05
97AK02A	2	0.1	0.18	<0.1	0.22	4	2	0.15	331	0.6	0.19	0.8	4	0.13
97AK02AX	2	0.2	0.18	<0.1	0.31	3	2	0.21	1400	0.4	0.24	1.5	4	0.11
97AK02B	10	0.7	0.06	<0.1	1.10	17	10	0.58	377	1.2	1.39	7.0	8	0.10
97AK02BX	12	0.8	0.06	<0.1	1.16	23	15	0.82	322	1.3	1.09	10.3	15	0.08
97AK02BZ	9	0.7	0.08	<0.1	1.04	15	9	0.54	358	1.1	1.33	6.3	8	0.10
97AK02C	16	1.2	<0.02	<0.1	1.70	18	18	1.32	689	0.8	2.08	11.3	17	0.06
97AK02CX	12	1.1	0.06	<0.1	1.48	27	17	0.82	403	1.2	1.40	10.7	15	0.07
97AK03A	4	0.3	0.06	<0.1	0.36	8	7	0.42	485	1.7	0.42	3.3	12	0.11
97AK03B	10	0.6	0.04	<0.1	0.86	21	15	0.74	394	0.9	1.03	7.4	17	0.11
97AK03C	14	1.1	0.04	<0.1	1.27	27	20	1.01	533	0.8	1.52	11.8	24	0.07
97AK04A	8	0.6	0.09	<0.1	0.68	16	9	0.44	191	1.1	0.64	6.4	11	0.09
97AK04B	13	1.1	0.05	<0.1	1.20	30	21	0.92	644	1.6	1.06	12.0	25	0.10
97AK04C	15	1.2	0.03	<0.1	1.64	35	27	1.18	745	1.4	1.27	14.5	24	0.09
97AK05A	11	0.7	0.05	<0.1	1.21	21	24	0.81	806	0.8	0.87	8.7	20	0.09
97AK05B	10	0.7	0.03	<0.1	1.15	17	21	0.70	627	0.7	0.86	7.9	17	0.08
97AK05BZ	10	0.8	0.03	<0.1	1.14	18	20	0.69	625	0.7	0.78	7.8	17	0.08
97AK05C	14	1.0	0.02	<0.1	1.47	26	29	0.87	588	0.8	1.04	10.4	22	0.07
97AK06A	2	0.2	0.11	<0.1	0.25	5	3	0.25	347	0.7	0.22	2.0	7	0.08
97AK06AX	1	0.1	0.08	<0.1	0.14	3	2	0.18	298	0.7	0.12	0.9	10	0.08
97AK06B	7	0.6	0.05	<0.1	0.74	17	13	0.63	502	0.7	0.80	5.4	15	0.08
97AK06BX	6	0.5	0.05	<0.1	0.64	13	12	0.50	368	0.8	0.58	4.4	15	0.08
97AK06C	11	0.8	0.04	<0.1	1.00	23	18	0.84	384	0.7	1.07	8.4	23	0.07
97AK06CX	11	1.0	0.04	<0.1	1.05	23	20	0.76	412	0.6	0.96	8.0	19	0.05
97AK06CZ	10	0.8	0.04	<0.1	1.00	22	18	0.77	354	0.6	1.00	8.5	22	0.06
97AK07A	3	0.3	0.13	<0.1	0.37	6	4	0.21	258	0.7	0.34	2.1	6	0.09
97AK07B	13	1.0	0.06	<0.1	1.05	22	16	0.77	330	1.3	1.26	9.1	16	0.08
97AK07BZ	13	1.0	0.06	<0.1	1.05	22	17	0.70	329	1.3	1.26	9.1	16	0.07
97AK07C	15	1.1	0.04	<0.1	1.24	26	22	0.97	654	1.7	1.59	10.6	19	0.06
97AK08A	5	0.4	0.14	<0.1	0.63	7	5	0.34	470	0.7	0.47	3.8	5	0.12

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska (continued).

Field Number	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm	Total S, %	Th, ppm	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm
97AK01A	6	0.2	1	37	0.15	0.5	0.1	0.6	1.3	3	43
97AK01AX	9	0.5	2	56	0.20	1.0	0.1	1.2	2.0	5	72
97AK01AZ	6	0.2	1	39	0.18	0.5	0.1	0.6	1.3	3	44
97AK01B	16	0.7	3	138	0.14	1.8	0.2	2.5	2.9	13	59
97AK01BX	28	1.0	8	120	0.10	3.3	0.3	1.8	6.0	14	56
97AK01C	31	1.6	8	129	0.03	4.1	0.3	1.3	7.5	30	77
97AK01CX	43	1.4	11	168	0.03	4.9	0.3	1.4	9.1	20	54
97AK01CXZ	45	1.4	11	177	<0.03	5.2	0.4	1.3	9.3	20	58
97AK02A	6	0.1	2	100	0.17	0.9	0.1	0.3	1.3	2	25
97AK02AX	9	0.1	2	129	0.14	0.9	0.1	0.3	1.6	2	31
97AK02B	35	0.4	8	487	0.08	3.7	0.3	1.3	6.4	10	37
97AK02BX	49	0.7	11	185	0.08	6.6	0.3	1.7	8.2	13	51
97AK02BZ	35	0.4	8	456	0.06	3.1	0.2	1.2	6.3	9	36
97AK02C	63	1.2	14	830	<0.03	3.8	0.4	1.3	132	17	64
97AK02CX	62	0.7	11	444	0.03	7.2	0.3	2.0	8.1	16	53
97AK03A	15	0.4	4	188	0.20	2.1	0.1	0.6	3.0	6	61
97AK03B	32	0.6	9	303	0.14	5.1	0.2	1.3	6.9	11	55
97AK03C	56	0.9	14	237	0.05	7.7	0.3	1.9	11.0	19	70
97AK04A	28	0.6	7	120	0.08	4.4	0.2	1.3	5.2	10	48
97AK04B	56	0.9	12	198	0.07	7.8	0.4	2.5	9.2	23	78
97AK04C	71	0.7	13	218	0.03	9.1	0.5	2.3	10.9	20	82
97AK05A	58	0.5	10	141	0.09	5.8	0.3	1.9	8.1	19	114
97AK05B	55	0.4	9	137	0.07	4.9	0.3	1.6	7.2	17	86
97AK05BZ	53	0.4	9	135	0.07	5.2	0.3	1.6	7.1	16	85
97AK05C	72	0.5	13	147	0.03	7.0	0.4	2.1	10.4	23	86
97AK06A	10	0.2	2	439	0.19	1.2	<0.1	3.7	17	4	25
97AK06AX	5	0.2	1	623	0.24	0.6	0.1	2.4	11	3	35
97AK06B	30	0.5	6	502	0.13	4.2	0.2	4.0	5.5	13	43
97AK06BX	27	0.5	6	543	0.17	3.0	0.2	2.6	4.6	11	50
97AK06C	45	0.8	10	507	0.09	5.4	0.2	2.6	8.4	19	57
97AK06CX	46	0.6	10	236	0.09	5.4	0.3	2.1	7.6	20	56
97AK06CZ	43	0.7	9	492	0.05	5.5	0.2	2.6	7.5	18	55
97AK07A	12	0.3	3	133	0.11	1.5	0.1	0.5	2.2	4	34
97AK07B	46	0.7	11	196	0.06	5.2	0.3	1.7	9.8	13	60
97AK07BZ	48	0.6	10	203	0.06	5.2	0.3	1.7	9.1	13	60
97AK07C	57	0.8	12	256	<0.03	6.4	0.4	1.9	11.5	16	72
97AK08A	24	0.4	4	85	0.08	1.9	0.2	0.5	3.1	5	53

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska (continued).

Field Number	Ag, ppm	Al, %	As, ppm	Ash, %	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Cr, ppm	Cs, ppm	Cu, ppm	Co, ppm	Ce, ppm	Fe, %
97AK08B	0.14	4.63	5.7	72.38	869	0.8	0.14	1.09	0.14	38	6	38	3	14	2.39
97AK08C	0.19	5.66	7.5	91.30	1000	1.2	0.18	1.37	0.00	43	7	51	4	18	2.83
97AK09A	0.18	5.52	3.9	71.66	659	0.8	0.14	1.93	0.36	44	16	49	2	22	4.44
97AK09B	0.13	4.97	2.6	65.41	641	0.9	0.07	1.64	0.26	29	9	34	2	13	2.94
97AK09C	0.16	7.14	4.5	86.02	860	1.2	0.09	2.24	0.26	50	14	46	2	26	4.65
97AK0AA	0.07	3.29	8.7	48.40	726	0.5	0.10	4.50	0.58	23	6	35	3	25	1.89
97AK0AB	0.12	4.99	13.9	69.30	901	1.1	0.14	3.33	0.83	35	9	55	4	30	2.77
97AK0AC	0.17	5.52	18.7	93.60	936	1.1	0.19	3.00	1.59	45	11	66	4	32	3.18
97AK10A	0.11	4.51	4.1	60.14	595	0.8	0.12	1.56	0.18	37	10	40	2	23	3.01
97AK10AZ	0.11	4.57	4.1	60.09	601	0.7	0.12	1.56	0.18	35	11	40	2	23	3.00
97AK10B	0.05	2.59	1.9	33.15	530	0.8	0.07	1.52	0.30	21	7	16	1	36	1.56
97AK10C	0.15	7.42	4.6	92.76	1110	1.4	0.06	2.23	0.37	42	12	42	2	28	3.99
97AK10CZ	0.14	7.55	3.7	92.02	1100	1.5	0.06	2.30	2.48	46	12	43	2	28	4.05
97AK11A	0.02	0.88	0.7	12.76	204	0.2	0.03	0.42	0.54	8	2	5	<1	10	0.48
97AK11AX	0.02	0.43	0.5	8.02	104	0.1	0.02	0.96	1.68	3	2	3	<1	7	0.26
97AK11AZ	0.05	0.94	0.5	13.66	219	0.2	0.03	0.44	0.52	8	2	5	<1	9	0.51
97AK11B	0.11	3.85	1.9	46.91	563	0.7	0.09	1.17	0.19	27	7	20	1	17	2.11
97AK11BX	0.09	3.32	2.6	42.00	504	0.8	0.08	2.14	0.50	42	12	22	1	33	2.27
97AK11BZ	0.08	3.81	1.9	47.00	564	0.6	0.05	1.18	0.19	26	7	20	1	17	2.12
97AK11C	0.16	7.71	3.8	95.14	1140	1.4	0.09	2.38	0.10	51	13	36	2	19	4.19
97AK11CX	0.13	6.33	3.3	82.27	905	1.2	0.08	2.30	0.25	47	10	44	2	26	4.11
97AK12A	0.13	4.28	2.6	63.94	831	0.7	0.26	0.83	0.19	31	6	19	1	29	2.49
97AK12C	0.26	6.54	3.7	93.43	1120	1.4	0.55	1.12	0.19	35	8	26	2	50	4.11
97AK12CZ	0.27	6.41	4.6	92.89	1120	1.2	0.52	1.11	0.19	34	9	24	2	47	3.90
97AK13A	0.68	1.73	0.8	25.02	325	0.3	0.05	0.93	0.63	11	4	24	1	12	0.90
97AK13B	0.27	5.12	2.1	70.17	702	0.8	0.14	1.54	0.42	30	6	41	2	27	0.98
97AK13C	0.21	7.41	2.9	95.01	846	0.6	0.10	3.99	0.19	25	29	152	2	33	5.61

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska (continued).

Field Number	Ga, ppm	Ge, ppm	Hg, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm
97AK08B	12	0.8	0.04	<0.1	1.38	21	14	0.80	340	1.0	1.09	10.1	14	0.07	11
97AK08C	15	1.1	0.02	<0.1	1.64	24	18	1.00	429	1.3	1.37	12.8	16	0.05	13
97AK09A	15	1.0	0.11	<0.1	1.07	23	16	1.86	860	1.1	1.50	12.9	17	0.11	13
97AK09B	12	0.7	0.04	<0.1	1.05	15	12	1.18	523	1.0	1.50	7.8	11	0.07	10
97AK09C	17	1.0	0.03	<0.1	1.46	27	19	1.81	791	1.1	2.06	12.0	15	0.09	15
97AK0AA	8	0.7	0.22	<0.1	0.68	15	15	0.63	436	1.0	0.58	4.7	23	0.08	8
97AK0AB	11	1.0	0.28	<0.1	0.97	21	23	0.83	631	1.1	0.90	6.3	28	0.08	16
97AK0AC	12	1.3	0.26	<0.1	1.12	26	24	1.03	1120	1.1	1.03	9.4	33	0.07	26
97AK10A	11	0.7	0.04	<0.1	0.90	19	13	1.14	547	1.2	1.20	7.2	14	0.07	10
97AK10AZ	11	0.7	0.04	<0.1	0.90	19	13	1.08	553	1.2	1.14	7.2	14	0.07	11
97AK10B	5	0.3	0.06	<0.1	0.60	12	4	0.43	431	1.3	0.76	2.9	10	0.12	6
97AK10C	16	1.1	0.02	<0.1	1.76	21	18	1.67	631	0.6	2.50	8.9	16	0.11	16
97AK10CZ	17	1.0	0.02	<0.1	1.75	25	18	1.75	644	0.6	2.48	10.1	17	0.11	41
97AK11A	2	0.1	0.16	<0.1	0.28	4	2	0.15	88	0.6	0.23	0.2	3	0.11	2
97AK11AX	1	0.1	0.12	<0.1	0.15	2	1	0.13	152	0.4	0.11	0.5	3	0.08	1
97AK11AZ	2	0.1	0.14	<0.1	0.29	4	2	0.15	96	0.6	0.27	0.8	3	0.11	2
97AK11B	8	0.5	0.06	<0.1	0.75	14	6	0.52	235	0.9	1.22	4.5	8	0.11	7
97AK11BX	8	0.5	0.07	<0.1	0.59	22	8	0.55	882	1.1	0.84	4.6	11	0.12	7
97AK11BZ	8	0.5	0.06	<0.1	0.75	14	6	0.52	235	0.9	1.22	4.0	8	0.11	7
97AK11C	16	0.9	0.03	<0.1	1.62	28	14	1.24	942	0.7	2.66	9.5	13	0.10	13
97AK11CX	15	0.9	0.04	<0.1	1.23	26	16	1.15	708	0.8	1.89	9.0	15	0.09	12
97AK12A	11	0.5	0.07	<0.1	0.83	17	6	0.77	275	1.2	0.90	6.3	8	0.09	8
97AK12C	16	0.7	0.05	<0.1	1.12	22	13	1.31	430	0.8	1.31	11.2	9	0.06	13
97AK12CZ	15	0.7	0.05	<0.1	1.11	22	12	1.21	418	0.8	1.30	10.2	8	0.06	12
97AK13A	4	0.2	0.17	<0.1	0.38	6	4	0.43	125	1.0	0.45	0.4	7	0.10	6
97AK13B	13	0.7	0.05	<0.1	1.33	17	13	0.63	274	1.5	1.82	6.7	10	0.08	10
97AK13C	15	1.2	<0.02	<0.1	0.86	12	29	3.42	1050	0.5	1.71	9.3	25	0.05	7

Table 11. Chemical results for the soil samples of the Fortymile River watershed, Alaska (continued).

Field Number	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm	Total S, %	Th, ppm	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm
97AK08B	59	0.6	9	181	0.04	5.5	0.3	1.4	80	13	53
97AK08C	74	0.6	11	228	<0.03	6.6	0.5	1.6	100	15	64
97AK09A	43	0.7	18	186	0.05	5.4	0.3	1.4	129	21	93
97AK09B	41	0.5	14	209	0.07	3.7	0.3	1.0	105	16	62
97AK09C	56	0.8	21	275	0.03	6.3	0.3	1.7	146	24	95
97AK0AA	33	2.1	7	145	0.13	3.8	0.3	2.9	63	15	77
97AK0AB	48	3.0	11	180	0.08	5.9	0.6	2.6	90	21	90
97AK0AC	51	4.0	13	187	<0.03	6.6	0.6	1.8	103	27	88
97AK10A	37	0.7	12	186	0.08	4.5	0.2	1.3	96	16	66
97AK10AZ	37	0.7	12	186	0.09	4.5	0.2	1.3	96	16	66
97AK10B	19	0.6	7	302	0.17	3.3	0.1	1.1	36	13	30
97AK10C	58	1.3	15	724	<0.03	4.5	0.3	1.4	121	19	83
97AK10CZ	59	1.3	16	736	<0.03	5.2	0.3	1.4	120	20	85
97AK11A	8	0.1	2	97	0.12	0.8	0.1	0.2	13	3	12
97AK11AX	4	0.1	1	75	0.12	0.5	<0.1	0.2	8	1	46
97AK11AZ	8	0.1	2	100	0.12	0.8	0.1	0.3	14	3	13
97AK11B	25	0.3	8	310	0.11	3.2	0.2	1.0	61	12	28
97AK11BX	25	0.7	8	290	0.15	3.9	0.2	1.5	59	17	42
97AK11BZ	26	0.3	8	315	0.11	3.0	0.2	0.9	61	12	28
97AK11C	55	0.9	15	752	<0.03	5.9	0.3	1.6	124	23	70
97AK11CX	52	0.7	15	535	0.05	5.8	0.3	1.7	132	21	78
97AK12A	36	0.3	9	90	0.06	4.6	0.2	1.5	54	15	59
97AK12C	54	0.4	13	112	<0.03	7.0	0.3	1.9	81	18	80
97AK12CZ	53	0.4	13	111	<0.03	6.9	0.3	1.9	78	18	77
97AK13A	14	0.1	5	168	0.09	1.5	0.1	0.6	30	6	25
97AK13B	40	0.4	7	547	0.04	4.4	0.3	1.6	58	11	47
97AK13C	40	0.6	30	171	<0.03	3.3	0.3	1.0	181	23	76

Table 12. Chemical results for the analysis of a gold-spiked soil inhouse reference material expressed on both the ash- and dry-weight basis.

Ash-Weight Basis											Data Converted to a Dry-Weight Basis												
Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm	Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm
1	0.15	6.5	18	1200	1.1	0.2	4.1	0.6	55	11	58	1	0.11	4.75	13	877	0.8	0.15	3.0	0.4	40	8.0	42
8	0.17	6.4	17	1200	1.4	0.2	4.1	0.5	52	11	52	8	0.12	4.66	12	873	1.0	0.15	3.0	0.4	38	8.0	38
16	0.14	6.2	16	1100	1.1	0.2	3.9	0.5	47	11	56	16	0.10	4.54	12	805	0.8	0.15	2.9	0.4	34	8.1	41
24	0.13	6.5	17	1200	1.1	0.2	4.0	0.5	55	11	64	24	0.09	4.75	12	876	0.8	0.15	2.9	0.4	40	8.0	47
32	0.15	6.3	18	1200	1.4	0.2	4.0	0.5	56	11	63	32	0.11	4.61	13	877	1.0	0.15	2.9	0.4	41	8.0	46
40	0.12	6.3	18	1200	1.8	0.2	4.1	0.5	49	11	62	40	0.09	4.60	13	876	1.3	0.15	3.0	0.4	36	8.0	45
48	0.18	6.3	18	1200	1.3	0.2	4.1	0.5	51	11	57	48	0.19	6.4	18	1200	1.2	0.2	4.2	0.5	58	11	59
56	0.19	6.4	18	1200	1.2	0.2	4.2	0.5	58	11	59	56	0.18	6.4	18	1200	1.0	0.2	4.1	0.5	54	11	59
64	0.18	6.4	18	1200	1.0	0.2	4.1	0.5	54	11	59												

Table 12. Chemical results for the analysis of a gold-spiked soil inhouse reference material expressed on both the ash- and dry-weight basis (continued).

Ash-Weight Basis											Data Converted to a Dry-Weight Basis												
Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm	Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm
1	6.6	33	3.5	16	1.2	< 0.1	1.5	31	24	1.3	550												
8	6.1	31	3.4	15	1.0	< 0.1	1.5	30	23	1.3	550												
16	6.0	30	3.4	15	1.1	< 0.1	1.5	27	22	1.3	540												
24	6.4	31	3.5	15	1.1	< 0.1	1.5	31	23	1.4	550												
32	6.3	32	3.4	15	1.0	< 0.1	1.5	31	23	1.3	560												
40	6.2	30	3.4	15	1.0	< 0.1	1.5	28	22	1.3	560												
48	6.3	33	3.4	16	1.1	< 0.1	1.4	29	22	1.3	530												
56	6.4	31	3.5	15	1.2	< 0.1	1.5	33	23	1.3	550												
64	6.3	31	3.5	16	1.2	< 0.1	1.5	30	23	1.3	560												

Table 12. Chemical results for the analysis of a gold-spiked soil inhouse reference material expressed on both the ash- and dry-weight basis (continued).

Ash-Weight Basis											
Field Number	Field No	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm
1	1	2.2	1.6	9.3	24	0.11	17	64	2.0	14	330
8	8	2.1	1.5	9.5	23	0.10	15	63	1.8	14	320
16	16	2.0	1.5	7.1	22	0.10	14	62	1.6	14	310
24	24	2.2	1.6	7.2	23	0.10	15	63	1.8	16	320
32	32	2.1	1.5	8.3	23	0.10	15	63	2.0	14	310
40	40	2.0	1.6	6.3	23	0.10	15	62	1.7	14	320
48	48	2.3	1.5	10	23	0.11	15	62	1.9	14	320
56	56	2.2	1.6	11	23	0.11	16	64	2.0	14	320
64	64	2.2	1.6	11	23	0.10	15	64	1.9	14	320

Data Converted to a Dry-Weight Basis											
Field Number	Field No	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm
1	1	1.6	1.17	6.8	18	0.08	12	47	1.5	10	241
8	8	1.5	1.09	6.9	17	0.07	11	46	1.3	10	233
16	16	1.5	1.10	5.2	16	0.07	10	45	1.2	10	227
24	24	1.6	1.17	5.3	17	0.07	11	46	1.3	12	234
32	32	1.5	1.10	6.1	17	0.07	11	46	1.5	10	227
40	40	1.5	1.17	4.6	17	0.07	11	45	1.2	10	234
48	48	1.7	1.09	7.3	17	0.08	11	45	1.4	10	234
56	56	1.6	1.17	8.0	17	0.08	12	47	1.5	10	234
64	64	1.6	1.17	8.0	17	0.07	11	47	1.4	10	233

Table 12. Chemical results for the analysis of a gold-spiked soil inhouse reference material expressed on both the ash- and dry-weight basis (continued).

Ash-Weight Basis								Measured on Dry-weight Basis					
Field Number	Th, ppm	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm	Total S, %	Ash, %	Hg, ppm	Au, ppm			
1	8.0	0.9	2.9	110	25	88							
8	7.4	0.9	2.7	110	25	84							
16	7.6	0.9	2.9	110	24	82							
24	8.2	0.9	2.9	110	25	85							
32	8.2	0.9	2.8	110	25	86							
40	7.3	0.9	2.8	110	24	84							
48	7.4	1.0	2.9	110	25	84							
56	8.0	0.8	3.0	110	25	85							
64	7.6	0.9	2.9	110	26	84							
Data Converted to a Dry-Weight Basis													
Field Number	Th, ppm	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm	Total S, %	Ash, %	Hg, ppm	Au, ppm			
1	5.8	0.7	2.1	80	18	64	0.08	73.09	0.14	0.041			
8	5.4	0.7	2.0	80	18	61	0.08	72.79	0.13	0.049			
16	5.6	0.7	2.1	81	18	60	0.08	73.21	0.14	0.036			
24	6.0	0.7	2.1	80	18	62	0.08	73.02	0.13	0.025			
32	6.0	0.7	2.0	80	18	63	0.08	73.12	0.13	0.024			
40	5.3	0.7	2.0	80	18	61	0.08	73.03	0.13	0.071			
48	5.4	0.7	2.1	80	18	61	0.08	72.98	0.14	0.026			
56	5.8	0.6	2.2	80	18	62	0.09	73.06	0.14	0.022			
64	5.5	0.7	2.1	80	19	61	0.08	72.95	0.14	0.024			

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glaucia* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska. (All analyses are expressed on a dry weight basis.)

Field Number	Leaf Ag, ppm	Ag, ppm	Leaf Al, %	Twig Al, %	Leaf As, ppm	As, ppm	Leaf Twig	Twig Twig	Ash, %	Ash, %	Leaf Ba, ppm	Ba, ppm	Leaf Twig	Twig Twig	Leaf Ba, ppm	Be, ppm	Leaf Ba, ppm	Be, ppm	Twig Be, ppm
Green alder (<i>Alnus crispa</i>)																			
97AK01AS	0.003	0.006	0.009	0.004	<0.03	0.03	4.28	6.46	30	47	<0.005	<0.002							
97AK01ASX	0.007	0.005	0.004	0.003	<0.03	0.03	3.77	6.73	36	45	<0.005	<0.002							
97AK02AS	0.005	0.004	0.004	0.003	<0.03	<0.03	4.28	5.98	51	90	0.012	0.004							
97AK02ASX	0.005	0.005	0.005	0.005	<0.03	<0.03	5.21	5.24	49	104	0.010	0.010							
97AK03AS	0.006	0.004	0.003	0.002	<0.03	<0.03	3.81	6.70	34	57	<0.005	<0.002							
97AK04AS	0.004	0.003	0.001	0.001	<0.03	<0.03	2.91	5.26	16	26	<0.005	0.003							
97AK05AS	0.006	0.005	0.002	0.003	<0.03	0.03	3.82	6.44	57	92	<0.005	0.015							
97AK06AS	0.012	0.006	0.023	0.025	0.04	0.04	3.80	7.43	30	32	0.007	0.008							
97AK06ASX	0.009	0.005	0.004	0.003	<0.03	0.02	3.44	6.19	16	28	<0.005	0.003							
97AK07AS	0.006	0.005	0.014	<0.03	<0.03	0.03	5.63	5.71	30	56	<0.005	0.006							
97AK08AS	0.004	0.003	0.004	0.004	<0.03	<0.03	3.60	4.97	75	86	0.010	0.004							
97AK09AS	0.010	0.003	0.065	0.008	0.13	0.03	3.01	6.59	45	39	0.013	<0.002							
97AK0AAS	0.006	0.003	0.005	0.004	<0.03	<0.03	3.32	6.49	18	14	<0.005	<0.002							
97AK10AS	0.003	0.002	0.003	0.002	<0.03	<0.03	3.04	4.70	29	79	0.005	<0.002							
97AK11AS	0.017	0.002	0.299	0.015	0.21	<0.03	4.00	10.47	126	128	0.073	0.012							
97AK11ASX	0.004	0.001	0.018	0.003	0.04	<0.03	3.22	6.30	49	90	0.006	0.003							
Grayleaf Willow (<i>Salix glauca</i>)																			
97AK01SG	0.006	0.001	0.048	0.009	0.10	0.04	4.84	9.80	43	33	<0.005	<0.002							
97AK01SGX	0.003	0.001	0.004	0.004	<0.03	0.03	3.76	7.04	15	22	<0.005	<0.002							
97AK02SG	0.003	<0.002	0.003	0.003	<0.03	0.04	4.72	7.23	64	80	<0.005	<0.002							
97AK02SGX	0.003	0.001	0.016	0.004	0.05	<0.03	3.53	6.16	38	49	<0.005	<0.002							
97AK03SG	0.005	0.001	0.004	0.001	<0.03	0.02	3.37	8.48	11	54	<0.005	<0.002							
97AK04SG	0.005	0.001	0.002	0.003	0.06	0.03	3.71	7.96	16	16	<0.005	<0.002							
97AK05SG	0.002	0.001	0.002	0.002	<0.03	<0.03	2.57	5.47	6	46	<0.005	<0.002							
97AK06SG	<0.002	0.001	0.002	0.005	<0.03	<0.03	4.35	7.49	7	70	<0.005	<0.002							
97AK06SGX	<0.002	0.002	0.002	0.017	<0.03	0.09	4.38	8.32	11	36	<0.005	0.009							
97AK07SG	0.002	0.001	0.007	0.003	0.04	0.03	4.32	6.49	24	8	<0.005	<0.002							
97AK08SG	0.004	0.001	0.002	0.004	<0.03	<0.03	3.57	6.38	31	6	<0.005	<0.002							
97AK09SG	0.004	0.001	0.003	0.002	<0.03	<0.03	3.70	6.26	38	17	<0.005	<0.002							
97AK0AAG	0.003	<0.002	0.003	0.002	<0.03	<0.03	4.24	7.27	12	20	<0.005	<0.002							
97AK10SG	0.003	0.001	0.003	0.003	<0.03	<0.03	4.56	8.38	39	18	<0.005	<0.002							
97AK11SG	0.002	0.001	0.003	0.004	<0.03	<0.03	3.63	6.31	37	51	<0.005	<0.002							
97AK11SGX	0.002	0.001	0.002	0.006	<0.03	0.02	3.59	5.88	14	20	<0.005	<0.002							

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf Bi, ppm	Twig Bi, ppm	Leaf Ca, %	Twig Ca, %	Leaf Cd, ppm	Twig Cd, ppm	Leaf Ce, ppm	Twig Ce, ppm	Leaf Co, ppm	Twig Co, ppm	Leaf Cr, ppm	Twig Cr, ppm
Green alder (<i>Alnus crispa</i>)												
97AK01AS	< 0.005	< 0.002	0.84	1.5	0.03	0.02	0.12	0.04	0.15	0.09	0.26	0.09
97AK01ASX	< 0.005	< 0.002	1.08	1.3	0.03	0.02	0.05	0.05	0.15	0.12	0.13	0.08
97AK02AS	< 0.005	< 0.002	0.96	1.7	0.03	0.02	0.12	0.11	0.33	0.42	< 0.05	< 0.05
97AK02ASX	< 0.005	< 0.002	1.05	2.2	0.04	0.02	0.14	0.12	0.18	0.27	0.10	0.05
97AK03AS	< 0.005	< 0.002	0.87	1.3	0.04	0.03	0.05	0.03	0.29	0.20	0.07	0.04
97AK04AS	< 0.005	< 0.002	0.74	0.6	0.01	0.01	0.03	0.01	0.16	0.09	< 0.05	0.03
97AK05AS	< 0.005	< 0.002	0.97	1.4	0.03	0.05	0.08	0.10	0.15	0.28	< 0.05	< 0.05
97AK06AS	< 0.005	< 0.002	1.26	1.3	0.04	0.02	0.31	0.53	0.46	0.42	0.30	0.19
97AK06ASX	< 0.005	< 0.002	0.93	1.2	0.02	0.02	0.06	0.06	0.46	0.33	< 0.05	< 0.05
97AK07AS	< 0.005	< 0.002	0.97	2.3	0.01	0.01	0.19	0.62	0.15	0.28	0.11	0.17
97AK08AS	< 0.005	< 0.002	0.89	1.4	0.05	0.04	0.07	0.08	0.36	0.43	< 0.05	< 0.05
97AK09AS	< 0.005	< 0.002	0.86	0.6	0.07	0.02	1.05	0.25	0.64	0.23	1.05	0.12
97AK0AAS	< 0.005	< 0.002	1.23	1.0	0.03	0.01	0.06	0.03	0.11	0.06	0.19	0.13
97AK10AS	< 0.005	< 0.002	0.61	0.9	0.04	0.02	0.06	0.04	0.12	0.12	< 0.05	< 0.05
97AK11AS	< 0.005	< 0.002	1.26	1.4	0.10	0.02	3.66	0.29	1.15	0.22	3.14	0.08
97AK11ASX	< 0.005	< 0.002	0.88	1.1	0.03	0.01	0.33	0.07	0.22	0.10	0.19	< 0.05
Grayleaf Willow (<i>Salix glauca</i>)												
97AK01SG	< 0.005	< 0.002	1.67	1.6	0.94	0.48	0.56	0.11	0.51	0.15	0.98	0.24
97AK01SGX	< 0.005	< 0.002	0.92	1.1	0.59	0.27	0.04	0.05	0.37	0.14	0.14	0.15
97AK02SG	< 0.005	< 0.002	1.08	1.3	1.88	0.80	0.10	0.07	1.74	0.47	< 0.05	< 0.05
97AK02SGX	< 0.005	< 0.002	0.86	0.7	1.48	0.67	0.29	0.09	0.62	0.23	0.25	0.07
97AK03SG	< 0.005	< 0.002	0.93	0.7	1.61	1.01	0.04	0.02	0.49	0.22	< 0.05	< 0.05
97AK04SG	< 0.005	< 0.002	1.03	1.3	1.75	0.45	0.02	0.03	0.25	0.24	< 0.05	0.04
97AK05SG	< 0.005	< 0.002	0.66	0.5	1.53	0.85	0.01	0.04	0.34	0.39	< 0.05	< 0.05
97AK06SG	< 0.005	< 0.002	1.12	1.2	0.48	1.00	0.01	0.07	0.37	0.17	< 0.05	0.26
97AK06SGX	< 0.005	< 0.002	1.33	1.2	1.16	0.53	0.02	0.48	1.00	0.35	< 0.05	0.18
97AK07SG	< 0.005	< 0.002	0.97	0.9	1.04	0.36	0.11	0.03	0.55	0.27	0.13	0.09
97AK08SG	< 0.005	< 0.002	0.77	1.1	1.66	0.17	0.03	0.03	0.34	0.11	< 0.05	0.07
97AK09SG	< 0.005	< 0.002	0.69	0.7	2.00	1.37	0.03	0.01	1.25	0.16	< 0.05	< 0.05
97AK0A SG	< 0.005	< 0.002	1.02	0.7	0.95	0.76	0.03	0.02	0.70	0.11	< 0.05	< 0.05
97AK10SG	< 0.005	< 0.002	0.92	0.7	2.43	0.73	0.04	0.02	0.84	0.16	0.08	0.09
97AK11SG	< 0.005	< 0.002	0.63	0.7	1.14	0.54	0.05	0.05	0.88	0.40	< 0.05	< 0.05
97AK11SGX	< 0.005	< 0.002	0.88	1.0	0.48	0.22	0.02	0.07	0.49	0.20	< 0.05	0.07

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf Cs, ppm	Twig Cs, ppm	Cu, ppm	Leaf Fe, %	Twig Fe, %	Leaf Ga, ppm	Twig Ga, ppm	Leaf Ge, ppm	Twig Ge, ppm	Leaf Hg, ppm	Twig Hg, ppm
Green alder (<i>Alnus crispa</i>)											
97AK01AS	0.09	0.06	12.9	6.4	0.016	0.008	0.05	0.013	<0.005	0.02	<0.02
97AK01ASX	0.15	0.08	16.8	7.2	0.013	0.008	0.03	0.015	<0.005	0.04	<0.02
97AK02AS	0.27	0.09	7.2	6.0	0.014	0.007	0.03	0.013	<0.005	0.04	<0.02
97AK02ASX	0.25	0.10	7.3	5.7	0.014	0.007	0.03	0.010	<0.005	0.02	<0.02
97AK03AS	0.11	0.06	18.1	9.9	0.016	0.008	0.03	0.011	<0.005	0.02	<0.02
97AK04AS	0.18	0.10	10.0	6.4	0.011	0.005	0.03	0.012	<0.005	0.02	<0.02
97AK05AS	0.10	0.06	14.8	9.9	0.012	0.008	0.03	0.011	<0.005	<0.02	<0.02
97AK06AS	0.25	0.14	13.4	7.6	0.034	0.022	0.08	0.061	<0.005	0.008	<0.02
97AK06ASX	0.14	0.09	10.5	6.5	0.025	0.014	0.04	0.010	<0.005	<0.02	<0.02
97AK07AS	0.11	0.07	10.8	7.3	0.018	0.016	0.03	0.034	<0.005	0.006	<0.02
97AK08AS	0.25	0.10	10.9	6.5	0.011	0.006	0.02	0.011	<0.005	<0.02	<0.02
97AK09AS	0.05	0.01	11.9	6.3	0.072	0.011	0.17	0.024	0.013	0.02	<0.02
97AK0-AAS	0.10	0.05	18.8	6.3	0.016	0.006	0.05	0.010	<0.005	<0.02	<0.02
97AK10AS	0.13	0.05	6.1	3.6	0.010	0.004	0.02	0.009	<0.005	<0.02	<0.02
97AK11AS	0.38	0.09	13.6	5.6	0.262	0.011	0.67	0.028	0.063	0.02	0.02
97AK11ASX	0.13	0.06	8.2	4.5	0.023	0.005	0.05	0.010	<0.005	0.02	<0.02
Grayleaf Willow (<i>Salix glauca</i>)											
97AK01SG	0.25	0.10	9.8	4.5	0.044	0.011	0.13	0.024	<0.005	0.02	0.02
97AK01SGX	0.06	0.03	7.7	3.0	0.011	0.006	0.04	0.015	<0.005	0.02	0.02
97AK02SG	0.02	0.01	8.7	9.0	0.009	0.005	0.03	0.009	<0.005	0.02	<0.02
97AK02SGX	0.02	0.01	7.4	9.2	0.019	0.006	0.06	0.018	<0.005	0.02	<0.02
97AK03SG	0.08	0.01	13.6	5.1	0.013	0.003	0.04	0.007	<0.005	0.03	<0.02
97AK04SG	0.02	0.01	9.6	4.1	0.010	0.006	0.03	0.007	<0.005	0.02	<0.02
97AK05SG	0.02	0.02	7.1	3.3	0.008	0.003	0.02	0.008	<0.005	<0.02	<0.02
97AK06SG	0.02	0.01	9.7	4.8	0.010	0.007	0.03	0.013	<0.005	0.03	<0.02
97AK06SGX	0.02	0.04	12.5	7.4	0.012	0.014	0.04	0.039	<0.005	0.02	<0.02
97AK07SG	0.04	0.00	9.1	3.9	0.016	0.005	0.03	0.013	<0.005	0.02	<0.02
97AK08SG	0.01	0.01	8.3	3.1	0.008	0.005	0.02	0.011	<0.005	0.02	<0.02
97AK09SG	0.04	0.02	6.3	5.9	0.008	0.004	0.03	0.011	<0.005	0.03	0.02
97AK0AAG	0.06	0.02	5.8	7.2	0.009	0.004	0.02	0.008	<0.005	0.03	<0.02
97AK10SG	0.02	0.03	9.2	8.2	0.011	0.005	0.03	0.014	<0.005	0.02	<0.02
97AK11SG	0.03	2.61	7.6	5.4	0.009	0.005	0.04	0.015	<0.005	0.02	<0.02
97AK11SGX	0.01	0.01	7.6	6.8	0.009	0.007	0.02	0.022	<0.005	0.02	<0.02

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf In, ppm	Twig In, ppm	K, %	Leaf K, %	Twig K, %	Leaf La, ppm	Twig La, ppm	Leaf Li, ppm	Twig Li, ppm	Leaf Mg, %	Twig Mg, %	Leaf Mn, ppm	Twig Mn, ppm
Green alder (<i>Alnus crispa</i>)													
97AK01AS	< 0.005	< 0.005	> 0.4	0.51	0.07	0.03	0.6	0.86	0.14	0.056	90	60	
97AK01ASX	< 0.005	< 0.005	> 0.4	--	0.03	0.03	1.5	0.75	0.19	0.053	121	41	
97AK02AS	< 0.005	< 0.005	> 0.4	0.33	0.10	0.09	1.0	1.20	0.31	0.107	520	274	
97AK02ASX	< 0.005	< 0.005	> 0.4	0.32	0.12	0.10	0.8	1.25	0.33	0.109	45	23	
97AK03AS	< 0.005	< 0.005	> 0.4	--	0.05	0.03	1.1	0.76	0.18	0.065	121	53	
97AK04AS	< 0.005	< 0.005	> 0.4	--	0.02	0.01	1.0	0.93	0.18	0.079	105	79	
97AK05AS	< 0.005	< 0.005	> 0.4	--	0.06	0.08	0.6	1.38	0.21	0.092	161	42	
97AK06AS	< 0.005	< 0.005	> 0.4	0.37	0.21	0.35	1.3	1.33	0.24	0.080	282	37	
97AK06ASX	< 0.005	< 0.005	> 0.4	0.52	0.03	0.06	0.9	1.00	0.20	0.072	241	55	
97AK07AS	< 0.005	< 0.005	> 0.4	0.27	0.11	0.53	0.9	1.18	0.18	0.068	103	62	
97AK08AS	< 0.005	< 0.005	> 0.4	0.20	0.06	0.07	1.5	0.97	0.25	0.072	99	126	
97AK09AS	< 0.005	< 0.005	> 0.4	--	0.66	0.15	0.8	0.78	0.27	0.087	178	75	
97AK0AAS	< 0.005	< 0.005	> 0.4	0.40	0.04	0.02	1.6	0.40	0.24	0.066	91	40	
97AK10AS	< 0.005	< 0.005	> 0.4	0.33	0.04	0.03	0.6	1.46	0.17	0.064	202	155	
97AK11AS	< 0.005	< 0.005	> 0.4	0.32	1.88	0.20	2.2	1.20	0.39	0.084	785	39	
97AK11ASX	< 0.005	< 0.005	> 0.4	0.39	0.24	0.06	0.8	0.93	0.25	0.100	69	64	
Grayleaf Willow (<i>Salix glauca</i>)													
97AK01SG	< 0.005	< 0.005	> 0.4	0.58	0.31	0.06	2.9	0.73	0.26	0.073	118	63	
97AK01SGX	< 0.005	< 0.005	> 0.4	0.49	0.02	0.03	1.4	0.60	0.23	0.075	65	49	
97AK02SG	< 0.005	< 0.005	> 0.4	--	0.09	0.06	0.7	1.18	0.22	0.104	39	25	
97AK02SGX	< 0.005	< 0.005	> 0.4	--	0.17	0.06	0.6	0.60	0.19	0.088	31	16	
97AK03SG	< 0.005	< 0.005	> 0.4	--	0.03	0.02	1.4	0.74	0.32	0.091	136	51	
97AK04SG	< 0.005	< 0.005	> 0.4	0.45	0.01	0.01	1.0	0.63	0.28	0.074	88	37	
97AK05SG	< 0.005	< 0.005	> 0.4	--	0.01	0.03	2.2	0.64	0.22	0.077	137	41	
97AK06SG	< 0.005	< 0.005	> 0.4	--	0.01	0.04	0.5	0.78	0.19	0.113	55	44	
97AK06SGX	< 0.005	< 0.005	> 0.4	--	< 0.01	0.34	0.7	0.96	0.28	0.145	83	57	
97AK07SG	< 0.005	< 0.005	> 0.4	--	0.08	0.01	0.7	0.91	0.29	0.095	52	52	
97AK08SG	< 0.005	< 0.005	> 0.4	0.50	0.02	0.01	0.4	0.71	0.24	0.064	64	39	
97AK09SG	< 0.005	< 0.005	> 0.4	--	0.03	0.01	0.5	0.78	0.23	0.115	63	78	
97AK0A SG	< 0.005	< 0.005	> 0.4	--	0.01	0.01	0.5	0.85	0.24	0.131	109	64	
97AK10SG	< 0.005	< 0.005	> 0.4	--	0.04	0.01	1.8	1.23	0.27	0.109	159	96	
97AK11SG	< 0.005	< 0.005	> 0.4	--	0.04	0.04	0.5	0.76	0.23	0.105	95	62	
97AK11SGX	< 0.005	< 0.005	> 0.4	--	0.01	0.04	0.3	0.36	0.20	0.086	15	54	

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf Mo, ppm	Twig Mo, ppm	Leaf Na, %	Twig Na, %	Nb, ppm	Nb, ppm	Leaf Ni, ppm	Twig Ni, ppm	Leaf P, %	Twig P, %	Leaf Pb, ppm	Twig Pb, ppm
Green alder (<i>Alnus crispa</i>)												
97AK01AS	0.44	0.73	0.005	0.007	<0.01	0.02	1.6	0.6	0.21	0.13	0.10	0.08
97AK01ASX	0.28	0.16	0.005	0.005	<0.01	0.01	2.2	0.7	0.25	0.11	0.11	0.16
97AK02AS	0.12	0.36	0.008	0.007	<0.01	<0.01	3.3	2.3	0.20	0.11	0.07	0.09
97AK02ASX	0.09	0.16	0.006	0.008	<0.01	0.01	2.8	1.8	0.20	0.08	0.09	0.14
97AK03AS	0.37	0.30	0.006	0.006	<0.01	<0.01	7.4	2.3	0.32	0.16	0.13	0.11
97AK04AS	0.36	0.81	0.004	0.005	<0.01	<0.01	3.1	0.9	0.25	0.19	0.04	0.04
97AK05AS	0.24	0.20	0.006	0.010	<0.01	<0.01	5.6	2.1	0.25	0.13	0.08	0.12
97AK06AS	0.43	0.10	0.010	0.016	0.01	0.01	3.1	1.2	0.29	0.11	0.15	0.13
97AK06ASX	0.62	0.21	0.006	0.009	<0.01	<0.01	2.5	0.9	0.30	0.15	0.07	0.06
97AK07AS	0.63	0.68	0.009	0.011	<0.01	<0.01	2.7	2.2	0.23	0.09	0.09	0.10
97AK08AS	<0.01	0.03	0.004	0.004	<0.01	<0.01	6.0	3.1	0.22	0.08	0.04	0.08
97AK09AS	0.79	0.60	0.022	0.011	0.07	0.01	3.0	0.9	0.22	0.13	0.33	0.09
97AK0AAS	0.78	0.96	0.004	0.003	<0.01	<0.01	1.9	0.4	0.29	0.10	0.10	0.06
97AK10AS	0.01	0.08	0.004	0.008	<0.01	<0.01	2.3	1.2	0.21	0.09	0.03	0.04
97AK11AS	0.13	0.01	0.086	0.011	0.44	<0.01	6.5	2.8	0.27	0.08	0.71	0.09
97AK11ASX	<0.01	0.02	0.009	0.007	<0.01	<0.01	2.4	1.1	0.22	0.09	0.09	0.04
Grayleaf Willow (<i>Salix glauca</i>)												
97AK01SG	0.33	0.03	0.012	0.005	0.02	<0.01	2.3	0.9	0.26	0.09	0.20	0.11
97AK01SGX	0.13	0.03	0.003	0.005	<0.01	<0.01	2.2	0.7	0.32	0.10	0.08	0.09
97AK02SG	0.14	0.05	0.008	0.008	<0.01	<0.01	2.4	1.2	0.24	0.11	0.06	0.06
97AK02SGX	0.08	0.05	0.003	0.003	0.02	0.03	1.9	1.3	0.23	0.14	0.10	0.05
97AK03SG	0.41	0.09	0.005	0.008	<0.01	<0.01	5.3	0.7	0.37	0.08	0.07	0.02
97AK04SG	0.80	0.02	0.004	0.004	<0.01	<0.01	3.2	0.6	0.29	0.08	0.03	0.07
97AK05SG	0.17	0.01	0.002	0.007	<0.01	<0.01	2.0	0.8	0.20	0.09	0.04	0.04
97AK06SG	0.22	0.00	0.004	0.007	<0.01	<0.01	3.3	1.4	0.28	0.10	0.06	0.09
97AK06SGX	0.35	0.02	0.005	0.016	<0.01	<0.01	5.9	1.5	0.36	0.13	0.05	0.13
97AK07SG	0.04	0.08	0.010	0.008	<0.01	<0.01	3.1	1.8	0.19	0.13	0.10	0.05
97AK08SG	0.02	0.04	0.005	0.006	<0.01	<0.01	3.6	0.9	0.17	0.10	0.03	0.10
97AK09SG	0.01	0.03	0.007	0.004	<0.01	<0.01	2.9	1.1	0.26	0.13	0.05	0.05
97AK0AASG	0.11	0.20	0.004	0.007	<0.01	<0.01	1.4	1.4	0.17	0.16	0.04	0.03
97AK10SG	0.49	0.14	0.006	0.007	<0.01	<0.01	1.4	1.6	0.16	0.15	0.07	0.04
97AK11SG	0.04	0.01	0.005	0.006	<0.01	<0.01	2.6	1.1	0.21	0.12	0.05	0.06
97AK11SGX	0.19	0.09	0.004	0.006	<0.01	<0.01	1.0	0.5	0.15	0.11	0.05	0.09

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf Rb, ppm	Twig Rb, ppm	Leaf Sb, ppm	Twig Sb, ppm	Sc, ppm	Leaf Sr, ppm	Twig Sr, ppm	Leaf Th, ppm	Twig Th, ppm	Leaf Tl, ppm	Twig Tl, ppm
Green alder (<i>Alnus crispa</i>)											
97AK01AS	14	5.1	0.01	<0.01	<0.01	16	26	0.013	<0.003	<0.01	<0.01
97AK01ASX	11	3.8	0.01	<0.01	<0.01	19	23	0.006	<0.003	<0.01	<0.01
97AK02AS	22	6.4	0.22	0.01	<0.01	47	68	0.004	<0.003	<0.01	<0.01
97AK02ASX	28	7.8	0.01	<0.01	<0.01	52	99	0.005	<0.003	<0.01	<0.01
97AK03AS	13	5.3	<0.01	<0.01	<0.01	15	23	0.005	<0.003	<0.01	<0.01
97AK04AS	21	12.2	<0.01	<0.01	<0.01	28	28	<0.003	<0.003	<0.01	<0.01
97AK05AS	13	5.3	<0.01	<0.01	<0.01	43	57	<0.003	<0.003	<0.01	<0.01
97AK06AS	17	6.8	<0.01	<0.01	<0.01	48	46	0.042	0.029	<0.01	<0.01
97AK06ASX	15	7.6	<0.01	<0.01	<0.01	35	45	0.006	<0.003	<0.01	<0.01
97AK07AS	25	8.4	<0.01	<0.01	<0.01	35	73	0.011	0.011	<0.01	<0.01
97AK08AS	18	4.3	<0.01	<0.01	<0.01	36	43	<0.003	<0.003	<0.01	<0.01
97AK09AS	12	3.9	0.02	<0.01	0.02	34	26	0.092	0.009	<0.01	<0.01
97AK0AAS	14	4.0	<0.01	<0.01	<0.01	30	28	0.013	<0.003	<0.01	<0.01
97AK10AS	29	9.4	<0.01	<0.01	<0.01	17	24	<0.003	<0.003	<0.01	<0.01
97AK11AS	37	10.0	0.06	<0.01	0.85	<0.01	57	40	0.356	<0.003	<0.01
97AK11ASX	18	7.7	<0.01	<0.01	<0.01	29	32	0.037	<0.003	<0.01	<0.01
Grayleaf Willow (<i>Salix glauca</i>)											
97AK01SG	21	6.3	0.02	<0.01	0.02	<0.01	34	22	0.074	0.003	<0.01
97AK01SGX	13	4.9	0.01	<0.01	<0.01	15	14	0.014	<0.003	<0.01	<0.01
97AK02SG	18	10.9	0.40	0.03	<0.01	60	38	<0.003	<0.003	<0.01	<0.01
97AK02SGX	11	6.7	0.06	0.01	<0.01	52	33	0.025	0.007	<0.01	<0.01
97AK03SG	29	8.8	<0.01	<0.01	<0.01	16	23	0.017	<0.003	<0.01	<0.01
97AK04SG	8	5.2	<0.01	<0.01	<0.01	48	23	<0.003	<0.003	<0.01	<0.01
97AK05SG	5	6.7	<0.01	<0.01	<0.01	20	19	<0.003	<0.003	<0.01	<0.01
97AK06SG	16	3.3	<0.01	<0.01	<0.01	82	31	<0.003	<0.003	<0.01	<0.01
97AK06SGX	12	15.3	<0.01	<0.01	<0.01	116	35	<0.003	0.009	<0.01	<0.01
97AK07SG	22	4.3	<0.01	<0.01	<0.01	38	60	0.006	<0.003	<0.01	<0.01
97AK08SG	5	5.7	<0.01	<0.01	<0.01	26	50	<0.003	<0.003	<0.01	<0.01
97AK09SG	16	3.2	<0.01	<0.01	<0.01	28	26	<0.003	<0.003	<0.01	<0.01
97AK0AASG	16	5.5	<0.01	<0.01	<0.01	27	33	<0.003	<0.003	<0.01	<0.01
97AK10SG	21	17.8	<0.01	<0.01	<0.01	33	15	<0.003	<0.003	<0.01	<0.01
97AK11SG	16	9.4	<0.01	<0.01	<0.01	30	25	<0.003	<0.003	<0.01	<0.01
97AK11SGX	9	5.0	<0.01	<0.01	<0.01	17	15	<0.003	<0.003	<0.01	<0.01

Table 13. Chemical results for the analyses of *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) leaf and twig samples from the Fortymile River watershed, Alaska (continued).

Field Number	Leaf Total S, %	Twig Total S, %	Green alder (<i>Alnus crispa</i>)												Grayleaf Willow (<i>Salix glauca</i>)											
			Leaf U, ppm	Leaf V, ppm	Leaf Y, ppm	Leaf Zn, ppm	Leaf U, ppm	Leaf V, ppm	Leaf Y, ppm	Leaf Zn, ppm	Leaf U, ppm	Leaf V, ppm	Leaf Y, ppm	Leaf Zn, ppm	Twig U, ppm	Twig V, ppm	Twig Y, ppm	Twig Zn, ppm	Twig U, ppm	Twig V, ppm	Twig Y, ppm	Twig Zn, ppm				
97AK01AS	0.27	0.09	0.005	<0.002	0.5	0.2	0.06	0.02	0.02	0.06	0.02	0.02	0.02	38	51											
97AK01ASX	0.26	0.09	<0.002	0.002	0.3	0.2	0.02	0.02	0.05	0.04	0.04	0.02	0.02	55	94											
97AK02AS	0.23	0.08	<0.002	<0.002	0.2	0.2	0.05	0.05	0.05	0.04	0.04	0.04	0.04	18	29											
97AK02ASX	0.19	0.08	0.003	0.004	0.3	0.2	0.06	0.05	0.06	0.05	0.05	0.05	0.05	23	29											
97AK03AS	0.40	0.11	<0.002	<0.002	0.3	0.2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	39	46											
97AK04AS	0.26	0.11	<0.002	<0.002	0.2	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	37	35											
97AK05AS	0.26	0.10	<0.002	<0.002	0.3	0.2	0.04	0.04	0.04	0.04	0.04	0.04	0.04	32	57											
97AK06AS	0.26	0.10	0.042	0.091	0.6	0.3	0.23	0.23	0.23	0.23	0.23	0.23	0.23	34	46											
97AK06ASX	0.32	0.10	0.005	0.023	0.3	0.1	0.03	0.03	0.03	0.03	0.03	0.03	0.03	31	31											
97AK07AS	0.30	0.09	0.126	0.619	0.3	0.3	0.07	0.07	0.07	0.07	0.07	0.07	0.07	34	62											
97AK08AS	0.25	0.07	<0.002	<0.002	0.2	0.1	0.06	0.06	0.06	0.06	0.06	0.06	0.06	27	43											
97AK09AS	0.29	0.10	0.061	0.009	1.6	0.2	0.55	0.55	0.55	0.55	0.55	0.55	0.55	36	39											
97AK0AAS	0.27	0.10	0.003	0.002	0.5	0.2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	55	40											
97AK10AS	0.23	0.07	<0.002	<0.002	0.2	0.1	0.03	0.03	0.03	0.03	0.03	0.03	0.03	25	29											
97AK11AS	0.28	0.08	0.126	0.008	7.9	0.2	1.68	1.68	1.68	1.68	1.68	1.68	1.68	41	26											
97AK11ASX	0.26	0.08	0.013	0.002	0.4	0.2	0.16	0.16	0.16	0.16	0.16	0.16	0.16	29	25											
97AK01SG	0.42	0.12	0.020	0.004	1.5	0.3	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.05	176	155										
97AK01SGX	0.34	0.10	<0.002	0.002	0.4	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	176	165											
97AK02SG	0.29	0.09	<0.002	<0.002	0.4	0.2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	87	71											
97AK02SGX	0.21	0.09	0.018	0.004	0.7	0.2	0.12	0.12	0.12	0.12	0.12	0.12	0.12	80	85											
97AK03SG	0.51	0.10	<0.002	<0.002	0.5	0.2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	119	138										
97AK04SG	0.49	0.23	<0.002	0.003	0.4	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	271	174											
97AK05SG	0.44	0.11	<0.002	<0.002	0.3	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	104	93											
97AK06SG	0.38	0.10	<0.002	<0.002	0.4	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	142	222											
97AK06SGX	0.50	0.16	<0.002	0.206	0.4	0.3	>0.01	>0.01	>0.01	>0.01	>0.01	>0.01	>0.01	116	223											
97AK07SG	0.34	0.13	0.044	<0.002	0.4	0.2	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.01	130	112										
97AK08SG	0.30	0.09	<0.002	<0.002	0.3	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	166	136											
97AK09SG	0.35	0.14	<0.002	0.003	0.3	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	81	174											
97AK0AASG	0.52	0.09	<0.002	<0.002	0.4	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	145	271											
97AK10SG	0.63	0.15	<0.002	<0.002	0.4	0.2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	<0.01	184	141										
97AK11SG	0.28	0.09	<0.002	<0.002	0.4	0.2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	114	152											
97AK11SGX	0.25	0.08	<0.002	0.003	0.3	0.2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	100	122										

Table 14. Chemical results for the analyses of *Hylocomium splendens* (feather moss) samples from the Forty Mile River watershed, Alaska. (All analyses are expressed on a dry weight basis.)

Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm
97AK01HS	0.006	0.22	0.29	96	0.03	0.005	0.86	0.20	1.3	0.6	2.3
97AK03HS	0.005	0.16	0.13	78	0.02	0.006	1.23	0.18	0.9	0.4	0.7
97AK04HS	0.004	0.14	0.18	63	0.02	0.004	0.94	0.12	1.0	0.3	0.8
97AK05HS	0.005	0.15	0.14	78	0.02	0.009	0.96	0.09	0.9	0.3	0.7
97AK06HS	0.006	0.29	0.17	51	0.04	0.006	1.04	0.06	1.3	0.5	1.0
97AK07HS	0.007	0.26	0.16	75	0.07	0.005	1.24	0.15	1.1	0.5	0.8
97AK08HS	0.007	0.21	0.14	52	0.03	0.007	0.55	0.16	0.9	0.4	0.8
97AK09HS	0.006	0.12	0.14	95	0.01	0.010	1.14	0.37	0.6	0.4	0.7
97AK10HS	0.004	0.19	0.17	53	0.02	0.007	0.60	0.13	0.8	0.4	1.0
97AK11HS	0.009	0.10	0.10	52	0.02	0.005	0.63	0.14	0.5	0.3	0.7
97AK12HS	0.025	0.54	0.98	114	0.14	0.016	0.50	0.09	2.7	1.0	4.1
97AK13HS	0.014	0.47	0.23	79	0.06	0.011	0.68	0.06	2.1	1.2	5.1

Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm
97AK01HS	1.11	6.1	0.13	0.5	0.04	<0.01	0.14	0.76	0.56	0.10	81
97AK03HS	0.08	5.7	0.09	0.3	0.03	<0.01	0.16	0.49	0.41	0.14	129
97AK04HS	0.09	6.3	0.08	0.3	0.02	<0.01	0.16	0.54	0.44	0.13	72
97AK05HS	0.05	6.4	0.08	0.3	0.02	<0.01	0.14	0.50	0.36	0.10	110
97AK06HS	0.07	6.3	0.14	0.5	0.04	<0.01	0.16	0.69	0.63	0.14	87
97AK07HS	0.06	5.4	0.12	0.5	0.04	<0.01	0.12	0.65	0.50	0.14	145
97AK08HS	0.07	16.9	0.11	0.4	0.03	<0.01	0.19	0.48	0.55	0.10	552
97AK09HS	0.05	5.7	0.07	0.3	0.02	<0.01	0.23	0.33	0.45	0.18	668
97AK10HS	0.06	6.3	0.10	0.4	0.03	<0.01	--	0.47	0.53	0.12	735
97AK11HS	0.05	6.5	0.05	0.2	0.02	<0.01	--	0.26	0.31	0.10	365
97AK12HS	0.16	8.7	0.28	1.0	0.05	<0.01	0.27	1.68	0.92	0.20	282
97AK13HS	0.16	8.5	0.33	1.0	0.06	<0.01	0.28	1.18	1.24	0.22	620

Table 14. Chemical results for the analyses of *Hylocomium splendens* (feather moss) samples from the Fortymile River watershed, Alaska (continued).

Field Number	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm	Th, ppm
97AK01HS	0.14	0.061	0.24	1.8	0.045	1.6	4.0	0.10	0.44	23	0.15
97AK03HS	0.41	0.054	0.15	0.8	0.059	0.8	3.0	0.03	0.26	30	0.10
97AK04HS	0.18	0.049	0.17	1.8	0.054	0.8	2.2	0.02	0.27	42	0.13
97AK05HS	0.23	0.055	0.14	0.9	0.044	0.9	1.6	0.02	0.25	42	0.08
97AK06HS	0.18	0.104	0.24	0.8	0.049	1.0	1.7	0.03	0.47	69	0.12
97AK07HS	0.42	0.081	0.21	1.2	0.047	0.8	2.1	0.03	0.40	52	0.10
97AK08HS	0.11	0.079	0.17	1.2	0.055	0.9	2.3	0.02	0.34	19	0.09
97AK09HS	0.08	0.048	0.10	1.1	0.081	0.6	2.4	0.02	0.24	32	0.07
97AK10HS	0.19	0.070	0.16	0.8	0.067	0.9	1.7	0.03	0.33	18	0.09
97AK11HS	0.12	0.037	0.08	0.8	0.078	0.7	2.3	0.02	0.17	18	0.05
97AK12HS	0.17	0.125	0.54	2.0	0.060	1.6	6.5	0.35	1.08	22	0.41
97AK13HS	0.12	0.124	0.49	1.7	0.085	1.1	6.8	0.04	1.47	29	0.27
Field Number	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm	Total S, %	Ash, %	Hg, ppm			
97AK01HS	0.02	0.06	3.5	0.8	41	0.05	5.06	0.08			
97AK03HS	0.01	0.04	2.2	0.5	71	0.07	6.47	0.05			
97AK04HS	0.01	0.05	2.1	0.5	16	0.07	4.47	0.03			
97AK05HS	0.00	0.92	2.0	0.6	31	0.07	4.58	0.06			
97AK06HS	0.01	0.05	3.6	0.8	25	0.06	5.77	0.04			
97AK07HS	0.01	2.80	3.3	1.1	22	0.06	5.38	0.04			
97AK08HS	0.01	0.04	2.7	0.6	28	0.05	3.45	0.04			
97AK09HS	0.00	0.03	1.9	0.4	44	0.06	4.77	0.06			
97AK10HS	0.01	0.03	2.5	0.5	24	0.06	3.34	0.05			
97AK11HS	0.01	0.02	1.4	0.3	37	0.05	2.61	0.07			
97AK12HS	0.02	0.12	7.6	1.4	18	0.04	5.42	0.04			
97AK13HS	0.02	0.09	8.5	1.5	30	0.04	5.64	0.04			

Table 15. Chemical results for the analyses of stream sediment samples from the Forty-mile River watershed, Alaska.

Field Number	Ag, ppm	Al, %	As, ppm	Au, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm
97AK01S	0.10	8.2	7.8	0.005	930	1.1	0.1	5.9	0.2	32	16	81
97AK01SX	0.09	9.1	8.6	<0.005	960	1.0	0.1	4.8	0.2	34	17	90
97AK02S	0.10	8.9	5.0	IS	1200	1.3	0.2	2.3	0.3	44	13	66
97AK02SX	0.09	9.6	5.0	IS	1300	1.5	0.1	2.4	0.2	48	14	66
97AK03S	0.15	9.6	7.2	0.035	1000	1.8	0.55	3.3	0.3	110	21	120
97AK04S	0.13	10.0	9.7	0.009	1100	1.9	0.2	2.6	0.3	63	17	88
97AK04SZ	0.12	9.8	12	0.007	1000	1.8	0.2	2.5	0.3	62	17	86
97AK05S	0.09	8.9	4.0	0.010	1100	1.8	0.1	1.6	0.2	35	12	55
97AK06S	0.16	9.9	4.0	0.012	1200	2.2	0.2	2.4	0.2	58	19	68
97AK06SX	0.16	10.0	6.0	<0.005	1100	3.2	0.2	2.4	0.2	64	20	73
97AK07S	0.14	9.8	7.9	0.010	1300	1.7	0.2	2.0	0.3	54	15	67
97AK08S	0.09	10.0	11.0	0.013	1200	1.3	0.2	2.8	0.2	35	26	92
97AK09S	0.11	10.0	5.2	<0.005	950	1.5	0.1	3.4	0.2	40	20	59
97AK09SZ	0.10	10.0	5.0	<0.005	950	1.8	0.1	3.3	0.2	41	19	58
97AK0AS	0.07	7.1	5.4	<0.005	1300	1.1	0.1	3.2	0.2	29	13	62
97AK10S	0.12	11.0	5.8	<0.005	900	1.4	0.2	3.2	0.2	45	19	74
97AK11S	0.11	11.0	4.0	0.012	890	1.4	0.1	3.7	0.2	38	22	52
97AK11SX	0.09	9.5	4.0	<0.005	850	1.8	0.2	3.1	0.2	39	18	63
97AK11SXZ	0.09	12.0	4.0	<0.005	860	1.3	0.2	3.1	0.2	42	18	64

Table 15. Chemical results for the analyses of stream sediment samples from the Fortymile River watershed, Alaska (continued).

Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	Hg, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %
97AK01S	3.6	20	4.9	14	1.2	0.05	<0.1	1.4	20	26	2.9
97AK01SX	3.7	40	5.2	15	1.3	0.05	<0.1	1.4	20	28	3.1
97AK02S	1.9	30	4.4	15	1.4	0.02	<0.1	2.3	26	22	1.8
97AK02SX	2.1	20	4.3	16	1.4	0.08	<0.1	2.5	28	24	1.9
97AK03S	2.4	31	7.4	18	1.6	0.03	<0.1	1.9	57	25	2.4
97AK04S	3.4	30	4.7	18	1.4	0.03	<0.1	2.2	39	31	2.0
97AK04SZ	3.3	30	4.6	18	1.4	0.03	<0.1	2.2	38	30	2.0
97AK05S	3.1	20	3.9	15	1.3	0.02	<0.1	1.8	20	30	1.4
97AK06S	3.9	30	5.4	20	1.3	<0.02	<0.1	2.3	34	29	1.6
97AK06SX	4.0	30	5.3	20	1.4	0.02	<0.1	2.1	39	30	1.7
97AK07S	3.7	34	4.8	18	1.6	<0.02	<0.1	2.4	29	37	1.7
97AK08S	2.6	32	6.7	17	1.5	0.02	<0.1	1.7	21	30	2.7
97AK09S	1.6	20	6.3	20	1.4	0.03	<0.1	1.9	24	21	2.9
97AK09SZ	1.6	20	6.2	20	1.3	0.02	<0.1	2.0	24	21	2.9
97AK0AS	2.4	30	3.9	13	1.2	0.06	<0.1	1.2	18	22	2.1
97AK10S	1.9	30	6.2	19	1.3	0.19	<0.1	1.7	26	21	2.8
97AK11S	1.7	32	7.4	21	1.4	<0.02	<0.1	1.9	21	22	2.9
97AK11SX	1.7	20	5.3	18	1.2	0.02	<0.1	1.8	23	18	2.6
97AK11SXZ	1.7	20	5.4	18	1.3	0.03	<0.1	1.8	25	18	2.7

Table 15. Chemical results for the analyses of stream sediment samples from the Fortymile River watershed, Alaska (continued).

Field Number	Mn, ppm	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm
97AK01S	1200	0.8	1.7	5.8	37	0.09	9.5	50	1.0	25	250
97AK01SX	1100	0.8	2.0	7.2	41	0.09	10	56	1.0	26	260
97AK02S	1300	0.7	2.3	8.9	21	0.08	21	79	0.5	18	300
97AK02SX	1300	0.6	2.5	8.5	22	0.09	18	85	0.5	18	320
97AK03S	1600	1.3	2.6	17	30	0.14	28	75	0.6	25	350
97AK04S	1000	1.0	2.5	13	33	0.11	19	93	0.8	20	310
97AK04SZ	970	1.2	2.4	13	33	0.11	18	92	0.7	20	300
97AK05S	740	0.8	2.2	8.4	23	0.09	14	75	0.3	17	190
97AK06S	960	1.4	2.0	20	32	0.11	17	110	0.2	18	250
97AK06SX	940	1.3	2.1	19	33	0.11	18	100	0.3	18	260
97AK07S	1100	1.0	2.2	14	27	0.10	20	120	0.5	21	220
97AK08S	1400	1.1	2.7	9.7	34	0.11	13	67	0.8	29	270
97AK09S	1300	0.8	4.2	13	20	0.12	16	68	1.0	25	390
97AK09SZ	1200	0.8	4.2	13	20	0.12	16	68	0.8	24	390
97AK0AS	1200	0.9	1.6	6.9	33	0.08	9.4	48	0.7	16	280
97AK10S	1200	0.8	3.7	14	25	0.12	24	66	0.8	27	360
97AK11S	1500	1	3.9	13	16	0.13	14	64	0.8	29	430
97AK11SX	1100	0.6	4.2	11	20	0.09	24	61	0.6	18	320
97AK11SXZ	1200	0.8	4.3	11	21	0.10	24	62	0.6	24	330

Table 15. Chemical results for the analyses of stream sediment samples from the Fortymile River watershed, Alaska (continued).

Field Number	Th, ppm	Tl, ppm	Total S, %	U, ppm	V, ppm	Y, ppm	Zn, ppm
97AK01S	5.6	0.3	0.04	1.7	170	29	95
97AK01SX	5.9	0.3	0.04	1.7	180	29	100
97AK02S	9.2	0.4	0.11	1.8	110	24	89
97AK02SX	9.8	0.4	0.08	1.9	120	24	85
97AK03S	21	0.4	0.19	3.3	200	41	120
97AK04S	13	0.5	0.04	3.0	140	28	120
97AK04SZ	13	0.5	0.04	3.0	140	28	110
97AK05S	7.0	0.4	<0.03	1.8	120	23	100
97AK06S	13	0.6	0.03	3.4	130	41	190
97AK06SX	14	0.6	0.04	3.6	130	46	130
97AK07S	12	0.7	<0.03	2.8	130	34	110
97AK08S	6.8	0.4	0.09	2.2	190	33	120
97AK09S	6.2	0.4	0.03	1.9	180	29	120
97AK09SZ	6.6	0.4	0.03	1.9	180	29	120
97AK0AS	5.5	0.3	0.04	2.0	120	26	90
97AK10S	7.9	0.4	0.04	2.3	190	30	120
97AK11S	6.9	0.3	<0.03	1.7	210	31	120
97AK11SX	6.8	0.3	0.03	1.9	150	25	120
97AK11SXZ	7.7	0.4	0.03	1.9	150	26	120

Table 16. Chemical results and inter-laboratory comparison for the analysis of a pyrite concentrate sample from a suction dredge operation on the Fortymile River, Alaska.

Element	ICP-AES 40 Contract Lab	ICP-AES 40 USGS Lab	ICP-AES 10 Contract Lab
Al, %	0.71	0.77	--
Ca, %	0.24	0.15	--
Fe, %	24	43.3	--
K, %	0.23	0.24	--
Mg, %	0.12	0.14	--
Na, %	0.05	0.06	--
P, %	0.01	<0.01	--
Ti, %	0.04	0.15	--
Mn, ppm	134	156	--
Ag, ppm	<2	0.8	0.3
As, ppm	27	15	6
Au, ppm	<8	<8	<0.1
Ba, ppm	31	63	--
Be, ppm	<1	0.3	--
Bi, ppm	21	--	<1
Cd, ppm	<2	--	0.08
Ce, ppm	5	--	--
Co, ppm	302	470	--
Cr, ppm	8	21	--
Cu, ppm	29	82	22
Eu, ppm	<2	2	--
Ga, ppm	<4	--	--
Ho, ppm	<4	--	--
La, ppm	<2	3	--
Li, ppm	3	--	--
Mo, ppm	<2	3	0.2
Nb, ppm	<4	--	--
Nd, ppm	<9	45	--
Ni, ppm	92	112	--
Pb, ppm	35	90	7
Sb, ppm	--	--	<1
Sc, ppm	4	4	--
Sn, ppm	<5	--	--
Sr, ppm	17	27	--
Ta, ppm	<40	--	--
Th, ppm	<6	--	--
U, ppm	<100	--	--
V, ppm	130	26	--
Y, ppm	3	5	--
Yb, ppm	1	2	--
Zn, ppm	17	10	17

--: Not Determined. Methods of analysis are given in Arbogast (1996).

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska.

(All analyses are on an ash weight basis unless noted.)

Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm
97AK01A	0.09	3.5	5.1	630	0.6	0.09	20	3.4	23	8.6	35
97AK01AX	0.14	4.7	6.1	1100	0.7	0.1	18	1.7	35	12	50
97AK01AZ	0.08	3.7	5.1	650	0.6	0.09	21	3.7	24	9.2	40
97AK01B	0.08	5.0	5.0	610	0.9	0.1	17	3.0	30	6.6	25
97AK01BX	0.11	5.5	7.0	1100	1.1	0.1	7.9	0.5	41	12	44
97AK01C	0.09	3.6	5.5	460	1.0	0.1	16	1.8	34	7.4	43
97AK01CX	0.12	4.8	7.2	980	0.9	0.1	7.8	0.3	39	10	42
97AK01CXZ	0.11	4.8	7.4	960	0.9	0.1	7.5	0.3	42	11	43
97AK02A	0.44	5.6	5.6	2300	1.3	0.2	5.6	1.1	59	23	40
97AK02AX	0.54	5.2	5	2000	0.9	0.2	5.4	1.5	36	16	51
97AK02B	0.28	7.7	5.2	1400	1.6	0.1	3.0	0.2	52	9.5	42
97AK02BX	0.21	7.1	8.4	1300	1.1	0.2	1.9	0.2	60	10	64
97AK02BZ	0.18	7.2	5.4	1400	1.2	0.1	2.8	0.2	47	9.5	41
97AK02C	0.18	7.7	6.2	1500	1.1	0.1	2.9	<0.1	36	12	59
97AK02CX	0.16	6.8	6.8	1200	1.4	0.2	2.0	0.2	57	8.9	46
97AK03A	0.16	6.4	12	1100	1.2	0.2	13	1	44	14	53
97AK03B	0.18	7.7	10	1100	1.3	0.2	5.6	0.2	63	11	66
97AK03C	0.22	7.4	120	1100	1.3	0.2	2.8	0.3	59	14	71
97AK04A	0.23	7.5	10	1400	1.4	0.3	2.2	2.4	71	13	88
97AK04B	0.21	7.5	12	1400	1.6	0.3	2.1	1.0	78	17	94
97AK04C	0.21	6.9	11	1300	1.4	0.2	1.8	0.1	71	14	70
97AK05A	0.21	6.7	7.6	1600	1.4	0.2	2.3	0.8	58	14	56
97AK05B	0.20	5.9	5.4	1400	1.4	0.1	1.9	0.7	44	12	54
97AK05BZ	0.21	5.9	5.3	1300	1.0	0.1	1.9	0.7	48	12	52
97AK05C	0.22	6.6	6.6	1400	1.8	0.2	1.3	0.5	55	13	63
97AK06A	0.15	4.4	5.7	870	0.9	0.1	16	1.1	35	11	35
97AK06AX	0.07	2.1	4	650	0.4	0.07	27	0.9	17	6.3	15
97AK06B	0.14	6.1	7.7	1100	0.9	0.1	6.0	0.3	50	12	48
97AK06BX	0.12	5.0	7.6	1100	1.0	0.1	7.5	0.3	38	9.8	44
97AK06C	0.16	6.1	8.3	1200	1.5	0.2	3.7	0.3	52	12	55
97AK06CX	0.14	5.5	6.5	1300	1.0	0.2	2.0	0.2	44	9.7	48
97AK06CZ	0.17	5.7	7.3	1200	0.9	0.2	3.6	0.3	50	11	54

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued).

Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm
97AK01A	35	34	1.3	7.1	0.7	<0.1	0.86	13	12	1.6	970
97AK01AX	28	60	2.7	10	1.0	<0.1	0.98	22	20	1.3	1100
97AK01AZ	37	38	1.4	7.7	0.8	<0.1	0.92	14	14	1.6	1000
97AK01B	20	30	1.1	10	0.9	<0.1	1.1	21	18	1.6	630
97AK01BX	28	37	3.0	12	1.1	<0.1	1.0	25	25	1.1	700
97AK01C	32	20	1.2	7.7	1.0	<0.1	0.66	24	20	3.2	280
97AK01CX	20	30	2.7	10	1.2	<0.1	0.94	23	24	0.98	350
97AK01CXZ	21	31	2.8	11	1.2	<0.1	0.95	24	24	0.98	360
97AK02A	3.0	77	3.3	12	0.9	<0.1	1.7	34	13	1.1	2500
97AK02AX	3.2	38	2.7	12	0.9	<0.1	1.8	20	13	1.2	8000
97AK02B	2.8	20	3.4	18	1.2	<0.1	1.9	29	17	1.0	650
97AK02BX	3.7	30	3.7	17	1.2	<0.1	1.7	34	22	1.2	470
97AK02BZ	2.6	20	3.3	16	1.2	<0.1	1.8	26	16	0.94	620
97AK02C	2.5	10	4.1	17	1.3	<0.1	1.8	19	19	1.4	730
97AK02CX	3.4	20	3.3	15	1.3	<0.1	1.8	33	21	1.0	490
97AK03A	3.3	57	3.4	14	1.0	<0.1	1.2	25	22	1.4	1600
97AK03B	3.4	36	3.7	17	1.1	<0.1	1.5	36	27	1.3	690
97AK03C	3.5	33	3.8	16	1.3	<0.1	1.5	32	24	1.2	630
97AK04A	3.5	31	4.1	19	1.4	<0.1	1.7	40	23	1.1	480
97AK04B	4.4	37	4.4	18	1.5	<0.1	1.7	43	29	1.3	910
97AK04C	4.1	20	3.8	17	1.3	<0.1	1.8	39	30	1.3	820
97AK05A	5.6	38	3.9	16	1.1	<0.1	1.8	32	35	1.2	1200
97AK05B	4.1	35	3.3	14	1.0	<0.1	1.6	24	29	0.97	870
97AK05BZ	4.0	30	3.2	14	1.1	<0.1	1.6	25	28	0.97	880
97AK05C	4.6	32	3.7	16	1.2	<0.1	1.7	30	33	1.0	680
97AK06A	2.5	46	1.5	9.8	0.7	<0.1	1.1	20	15	1.1	1500
97AK06AX	1.0	42	0.83	4.6	0.4	<0.1	0.50	11	7.0	0.68	1100
97AK06B	2.6	37	3.2	13	1.1	<0.1	1.3	29	23	1.1	880
97AK06BX	2.2	34	2.7	11	0.9	<0.1	1.1	22	20	0.85	630
97AK06C	2.7	44	3.2	14	1.1	<0.1	1.3	30	24	1.1	500
97AK06CX	2.4	33	2.7	12	1.1	<0.1	1.2	26	23	0.87	470
97AK06CZ	2.6	39	3.0	13	1.1	<0.1	1.3	29	23	1.0	460

Table 17. Chemical results as measured for all soil samples from the Forty-mile River watershed, Alaska (continued)

Field Number	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sr, ppm	Th, ppm
97AK01A	2.8	0.79	2.2	31	0.42	11	35	1.3	7.9	220
97AK01AX	2.1	0.84	5.5	40	0.38	11	40	2.1	10	260
97AK01AZ	2.9	0.84	1.0	33	0.44	11	36	1.4	8.4	230
97AK01B	1.8	1.5	4.0	23	0.21	9.7	32	1.5	6.1	280
97AK01BX	0.9	1.0	5.0	30	0.12	9.8	47	1.7	13	200
97AK01C	0.5	0.68	4.9	30	0.09	8.8	34	1.7	9.2	140
97AK01CX	0.6	0.96	7.5	27	0.05	8.4	46	1.5	12	180
97AK01CXZ	0.6	0.99	7.6	28	0.05	9.1	48	1.5	12	190
97AK02A	4.7	1.4	5.8	34	0.96	13	48	1.0	13	760
97AK02AX	2.5	1.4	8.6	23	0.64	13	50	0.8	12	740
97AK02B	2.0	2.4	12	14	0.17	12	61	0.7	13	840
97AK02BX	1.9	1.6	15	22	0.12	16	71	1.0	16	270
97AK02BZ	1.9	2.3	11	14	0.17	11	60	0.7	13	790
97AK02C	0.9	2.2	12	18	0.06	21	67	1.3	15	880
97AK02CX	1.4	1.7	13	18	0.08	15	75	0.8	13	540
97AK03A	5.5	1.4	11	40	0.36	13	48	1.3	13	620
97AK03B	1.6	1.8	13	30	0.19	15	56	1.1	15	530
97AK03C	0.9	1.8	14	28	0.08	16	66	1.1	16	280
97AK04A	2.7	1.6	16	28	0.22	20	69	1.4	18	300
97AK04B	2.3	1.5	17	36	0.14	20	79	1.3	17	280
97AK04C	1.5	1.4	16	26	0.10	18	78	0.8	14	240
97AK05A	1.2	1.3	13	30	0.13	15	86	0.7	15	210
97AK05B	1.0	1.2	11	24	0.11	13	76	0.6	12	190
97AK05BZ	1.0	1.1	11	24	0.11	14	74	0.6	12	190
97AK05C	0.9	1.2	12	26	0.08	15	83	0.6	15	170
97AK06A	3.1	0.96	8.8	31	0.36	11	42	0.9	10	1900
97AK06AX	2.6	0.45	3.4	36	0.29	5.0	17	0.6	3	2300
97AK06B	1.3	1.4	9.5	27	0.14	11	53	0.9	11	880
97AK06BX	1.4	1.0	7.5	26	0.13	10	46	0.8	10	930
97AK06C	0.9	1.4	11	30	0.09	12	58	1.0	13	660
97AK06CX	0.7	1.1	9.1	22	0.06	12	53	0.7	11	270
97AK06CZ	0.8	1.3	11	28	0.08	12	56	0.9	12	640

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued)

Field Number	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm	Dry Weight Basis		
						Ash, %	Hg, ppm	Total S, %
97AK01A	0.5	3.8	76	15	250	17.03	0.13	0.15
97AK01AX	0.6	5.6	93	23	330	21.72	0.16	0.20
97AK01AZ	0.5	3.8	79	16	260	16.94	0.15	0.18
97AK01B	0.4	5.0	58	27	120	49.22	0.11	0.14
97AK01BX	0.5	3.0	100	23	94	59.79	0.1	0.10
97AK01C	0.3	1.4	81	33	84	92.22	0.14	0.03
97AK01CX	0.3	1.5	98	21	58	93.10	0.09	0.03
97AK01CXZ	0.4	1.4	100	22	62	93.02	0.09	<0.03
97AK02A	0.5	2.2	96	17	190	13.22	0.18	0.17
97AK02AX	0.4	1.6	90	14	180	17.47	0.18	0.14
97AK02B	0.5	2.2	110	18	64	58.02	0.06	0.08
97AK02BX	0.5	2.5	120	19	75	68.41	0.06	0.08
97AK02BZ	0.4	2.1	110	16	62	57.70	0.08	0.06
97AK02C	0.4	1.4	140	18	68	94.32	<0.02	<0.03
97AK02CX	0.4	2.4	98	20	64	82.31	0.06	0.03
97AK03A	0.4	2.0	100	19	200	30.29	0.06	0.20
97AK03B	0.4	2.2	120	20	97	57.13	0.04	0.14
97AK03C	0.4	2.2	130	23	83	84.57	0.04	0.05
97AK04A	0.5	3.2	130	26	120	39.87	0.09	0.08
97AK04B	0.5	3.5	130	32	110	70.78	0.05	0.07
97AK04C	0.6	2.5	120	22	90	90.85	0.03	0.03
97AK05A	0.5	2.9	120	28	170	67.16	0.05	0.09
97AK05B	0.4	2.2	100	23	120	72.04	0.03	0.07
97AK05BZ	0.4	2.2	100	22	120	71.00	0.03	0.07
97AK05C	0.5	2.4	120	27	99	86.51	0.02	0.03
97AK06A	0.2	16	75	18	110	23.11	0.11	0.19
97AK06AX	0.2	8.7	40	11	130	27.08	0.08	0.24
97AK06B	0.3	7.0	96	22	75	57.02	0.05	0.13
97AK06BX	0.3	4.5	78	19	85	58.35	0.05	0.17
97AK06C	0.3	3.4	110	25	74	76.78	0.04	0.09
97AK06CX	0.3	2.4	87	23	64	87.57	0.04	0.09
97AK06CZ	0.3	3.4	97	24	72	76.93	0.04	0.05

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued).

Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm
97AK07A	1.3	6.5	5.4	1400	1.0	0.2	3.1	2.4	52	16	58
97AK07B	0.37	7.4	8.8	1200	1.2	0.2	1.7	0.4	56	12	74
97AK07BZ	0.30	7.4	8.8	1200	0.9	0.2	1.6	0.4	55	12	76
97AK07C	0.22	7.3	9.8	1100	1.2	0.2	1.6	0.2	53	16	65
97AK08A	0.19	6.0	5.2	1200	1.2	0.1	2.0	0.9	42	8.1	43
97AK08B	0.20	6.4	7.9	1200	1.1	0.2	1.5	0.2	52	8.7	53
97AK08C	0.21	6.2	8.2	1100	1.3	0.2	1.5	<0.1	47	8.0	56
97AK09A	0.25	7.7	5.4	920	1.1	0.2	2.7	0.5	61	22	69
97AK09B	0.20	7.6	4	980	1.4	0.1	2.5	0.4	44	14	52
97AK09C	0.19	8.3	5.2	1000	1.4	0.1	2.6	0.3	58	16	53
97AK0AA	0.15	6.8	18	1500	1.1	0.2	9.3	1.2	48	13	73
97AK0AB	0.17	7.2	20	1300	1.6	0.2	4.8	1.2	51	13	80
97AK0AC	0.18	5.9	20	1000	1.2	0.2	3.2	1.7	48	12	70
97AK10A	0.19	7.5	6.9	990	1.3	0.2	2.6	0.3	61	17	67
97AK10AZ	0.18	7.6	6.9	1000	1.2	0.2	2.6	0.3	59	18	66
97AK10B	0.14	7.8	5.6	1600	2.4	0.2	4.6	0.9	64	20	48
97AK10C	0.16	8.0	5	1200	1.5	0.07	2.4	0.4	45	13	45
97AK10CZ	0.15	8.2	4	1200	1.6	0.07	2.5	2.7	50	13	47
97AK11A	0.19	6.9	5.3	1600	1.6	0.2	3.3	4.2	63	19	38
97AK11AX	0.25	5.3	6.6	1300	0.8	0.2	12	21	42	21	42
97AK11AZ	0.35	6.9	4	1600	1.3	0.2	3.2	3.8	55	18	36
97AK11B	0.23	8.2	4	1200	1.5	0.2	2.5	0.4	57	14	42
97AK11BX	0.22	7.9	6.2	1200	1.9	0.2	5.1	1.2	99	29	53
97AK11BZ	0.18	8.1	4	1200	1.2	0.1	2.5	0.4	55	14	42
97AK11C	0.17	8.1	4	1200	1.5	0.09	2.5	0.1	54	14	38
97AK11CX	0.16	7.7	4	1100	1.5	0.1	2.8	0.3	57	12	53
97AK12A	0.21	6.7	4	1300	1.1	0.4	1.3	0.3	48	8.9	29
97AK12C	0.28	7.0	4	1200	1.5	0.59	1.2	0.2	37	9.0	28
97AK12CZ	0.29	6.9	5	1200	1.3	0.56	1.2	0.2	37	9.3	26
97AK13A	2.7	6.9	3	1300	1.0	0.2	3.7	2.5	45	17	97
97AK13B	0.38	7.3	3	1000	1.1	0.2	2.2	0.6	43	8.7	58
97AK13C	0.22	7.8	3	890	0.6	0.1	4.2	0.2	26	30	160

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued).

Field Number	Cs, ppm	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm
97AK07A	2.5	42	3.2	16	1.2	<0.1	1.7	29	18	0.99	1200
97AK07B	3.3	38	3.8	18	1.4	<0.1	1.5	31	23	1.1	470
97AK07BZ	3.2	37	3.8	18	1.4	<0.1	1.5	31	24	1.0	470
97AK07C	3.0	32	3.9	17	1.2	<0.1	1.4	29	25	1.1	740
97AK08A	3.6	20	2.8	15	1.2	<0.1	2.0	23	17	1.1	1500
97AK08B	4.0	20	3.3	16	1.1	<0.1	1.9	29	20	1.1	470
97AK08C	3.9	20	3.1	16	1.2	<0.1	1.8	26	20	1.1	470
97AK09A	2.8	31	6.2	21	1.4	0.1	1.5	32	23	2.6	1200
97AK09B	2.5	20	4.5	19	1.1	<0.1	1.6	23	18	1.8	800
97AK09C	2.6	30	5.4	20	1.2	<0.1	1.7	31	22	2.1	920
97AK0AA	6.4	52	3.9	16	1.4	<0.1	1.4	30	32	1.3	900
97AK0AB	6.4	44	4.0	16	1.5	<0.1	1.4	31	33	1.2	910
97AK0AC	4.7	34	3.4	13	1.4	<0.1	1.2	28	26	1.1	1200
97AK10A	2.8	38	5.0	18	1.2	<0.1	1.5	32	22	1.9	910
97AK10AZ	2.9	39	5.0	18	1.1	<0.1	1.5	32	22	1.8	920
97AK10B	1.7	110	4.7	16	0.9	<0.1	1.8	36	13	1.3	1300
97AK10C	1.7	30	4.3	17	1.2	<0.1	1.9	23	19	1.8	680
97AK10CZ	1.7	30	4.4	18	1.1	<0.1	1.9	27	20	1.9	700
97AK11A	2.4	75	3.8	14	1.0	<0.1	2.2	34	13	1.2	690
97AK11AX	2.3	82	3.2	12	0.8	<0.1	1.9	22	13	1.6	1900
97AK11AZ	2.3	67	3.7	14	1.0	<0.1	2.1	30	11	1.1	700
97AK11B	1.9	37	4.5	17	1.1	<0.1	1.6	30	12	1.1	500
97AK11BX	2.6	79	5.4	18	1.2	<0.1	1.4	53	18	1.3	2100
97AK11BZ	1.9	36	4.5	17	1.1	<0.1	1.6	29	12	1.1	500
97AK11C	1.6	20	4.4	17	0.9	<0.1	1.7	29	15	1.3	990
97AK11CX	2.2	32	5.0	18	1.1	<0.1	1.5	31	20	1.4	860
97AK12A	1.9	45	3.9	17	0.8	<0.1	1.3	26	9.9	1.2	430
97AK12C	1.8	54	4.4	17	0.8	<0.1	1.2	24	14	1.4	460
97AK12CZ	1.7	51	4.2	16	0.7	<0.1	1.2	24	13	1.3	450
97AK13A	3.0	48	3.6	15	0.8	<0.1	1.5	25	14	1.7	500
97AK13B	2.8	39	1.4	18	1.0	<0.1	1.9	24	19	0.90	390
97AK13C	1.7	35	5.9	16	1.3	<0.1	0.91	13	30	3.6	1100

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued)

Field Number	Mo, ppm	Na, %	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sc, ppm	Sr, ppm	Th, ppm
97AK07A	3.1	1.6	9.7	28	0.43	14	55	1.3	16	620	7.1
97AK07B	1.9	1.8	13	23	0.11	16	66	1.0	15	280	7.4
97AK07BZ	1.9	1.8	13	23	0.10	16	68	0.9	15	290	7.5
97AK07C	1.9	1.8	12	22	0.07	15	65	0.9	14	290	7.2
97AK08A	2.2	1.5	12	16	0.37	13	76	1.2	12	270	6.1
97AK08B	1.4	1.5	14	19	0.10	15	82	0.8	13	250	7.6
97AK08C	1.4	1.5	14	17	0.06	14	81	0.7	12	250	7.2
97AK09A	1.5	2.1	18	24	0.16	18	60	1.0	25	260	7.5
97AK09B	1.6	2.3	12	17	0.11	16	62	0.8	22	320	5.6
97AK09C	1.3	2.4	14	18	0.11	18	65	0.9	24	320	7.3
97AK0AA	2.1	1.2	9.7	47	0.17	17	68	4.3	15	300	7.8
97AK0AB	1.6	1.3	9.1	41	0.12	23	69	4.4	16	260	8.5
97AK0AC	1.2	1.1	10	35	0.08	28	54	4.3	14	200	7.1
97AK10A	2.0	2.0	12	23	0.12	17	62	1.2	20	310	7.5
97AK10AZ	2.0	1.9	12	23	0.12	18	62	1.2	20	310	7.5
97AK10B	4.0	2.3	8.8	30	0.36	17	57	1.7	22	910	10
97AK10C	0.7	2.7	9.6	17	0.12	17	62	1.4	16	780	4.9
97AK10CZ	0.6	2.7	11	18	0.12	45	64	1.4	17	800	5.7
97AK11A	4.9	1.8	1.3	26	0.87	18	62	0.9	16	760	6.3
97AK11AX	5.1	1.4	6.2	35	0.98	15	52	1.6	14	930	6.4
97AK11AZ	4.5	2.0	5.8	24	0.82	18	59	0.9	16	730	6.1
97AK11B	2.0	2.6	9.5	18	0.24	15	54	0.7	18	660	6.8
97AK11BX	2.5	2.0	11	26	0.28	17	59	1.6	20	690	9.4
97AK11BZ	1.9	2.6	8.6	18	0.23	15	56	0.6	18	670	6.4
97AK11C	0.7	2.8	10	14	0.10	14	58	0.9	16	790	6.2
97AK11CX	1.0	2.3	11	18	0.11	15	63	0.9	18	650	7.1
97AK12A	1.8	1.4	9.8	12	0.14	13	56	0.5	14	140	7.2
97AK12C	0.9	1.4	12	9.4	0.06	14	58	0.4	14	120	7.5
97AK12CZ	0.9	1.4	11	9.1	0.06	13	57	0.4	14	120	7.4
97AK13A	4.0	1.8	1.7	28	0.41	22	54	0.4	19	670	6.1
97AK13B	2.1	2.6	9.5	14	0.12	14	57	0.6	10	780	6.2
97AK13C	0.5	1.8	9.8	26	0.05	7.6	42	0.6	32	180	3.5

Table 17. Chemical results as measured for all soil samples from the Fortymile River watershed, Alaska (continued)

Field Number	Tl, ppm	U, ppm	V, ppm	Y, ppm	Zn, ppm	Dry Weight Basis		
						Ash, %	Hg, ppm	Total S, %
97AK07A	0.4	2.2	100	19	160	21.51	0.13	0.11
97AK07B	0.4	2.4	140	18	86	70.15	0.06	0.06
97AK07BZ	0.4	2.5	130	19	86	69.92	0.06	0.06
97AK07C	0.4	2.1	130	18	81	88.34	0.04	<0.03
97AK08A	0.5	1.6	98	16	170	31.31	0.14	0.08
97AK08B	0.4	1.9	110	18	73	72.38	0.04	0.04
97AK08C	0.5	1.7	110	16	70	91.30	0.02	<0.03
97AK09A	0.4	1.9	180	30	130	71.66	0.11	0.05
97AK09B	0.4	1.6	160	24	95	65.41	0.04	0.07
97AK09C	0.4	2.0	170	28	110	86.02	0.03	0.03
97AK0AA	0.7	6.0	130	32	160	48.40	0.22	0.13
97AK0AB	0.8	3.8	130	31	130	69.30	0.28	0.08
97AK0AC	0.6	1.9	110	29	94	93.60	0.26	<0.03
97AK10A	0.4	2.2	160	26	110	60.14	0.04	0.08
97AK10AZ	0.4	2.2	160	26	110	60.09	0.04	0.09
97AK10B	0.4	3.2	110	40	90	33.15	0.06	0.17
97AK10C	0.3	1.5	130	21	89	92.76	0.02	<0.03
97AK10CZ	0.3	1.5	130	22	92	92.02	0.02	<0.03
97AK11A	0.4	1.9	100	25	97	12.76	0.16	0.12
97AK11AX	0.3	2.1	94	18	570	8.02	0.12	0.12
97AK11AZ	0.4	1.9	100	24	94	13.66	0.14	0.12
97AK11B	0.4	2.2	130	26	60	46.91	0.06	0.11
97AK11BX	0.4	3.6	140	40	100	42.00	0.07	0.15
97AK11BZ	0.4	1.9	130	26	60	47.00	0.06	0.11
97AK11C	0.3	1.7	130	24	74	95.14	0.03	<0.03
97AK11CX	0.4	2.1	160	26	95	82.27	0.04	0.05
97AK12A	0.3	2.3	84	23	92	63.94	0.07	0.06
97AK12C	0.3	2.0	87	19	86	93.43	0.05	<0.03
97AK12CZ	0.3	2.0	84	19	83	92.89	0.05	<0.03
97AK13A	0.4	2.2	120	22	100	25.02	0.17	0.09
97AK13B	0.4	2.3	83	15	67	70.17	0.05	0.04
97AK13C	0.3	1.0	190	24	80	95.01	<0.02	<0.03

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix gauca* (grayleaf willow) samples,
Fortymile River watershed, Alaska. (All analyses are on an ash weight basis unless noted.)

Field Number	Leaf Ag, ppm	Twig Ag, ppm	Leaf Al, %	Twig Al, %	Leaf As, ppm	Twig As, ppm	Leaf Ba, ppm	Twig Ba, ppm	Leaf Be, ppm	Twig Be, ppm	Leaf Bi, ppm	Twig Bi, ppm
Green alder (<i>Alnus crispa</i>)												
97AK01AS	0.05	0.14	0.15	0.10	< 0.5	0.8	460	1100	< 0.1	< 0.1	< 0.05	< 0.05
97AK01ASX	0.11	0.13	0.07	0.09	< 0.5	0.9	530	1200	< 0.1	< 0.1	< 0.05	< 0.05
97AK02AS	0.09	0.10	0.07	0.08	< 0.5	< 0.5	860	2100	0.2	0.1	< 0.05	< 0.05
97AK02ASX	0.09	0.09	0.09	0.09	< 0.5	< 0.5	940	2000	0.2	0.2	< 0.05	< 0.05
97AK03AS	0.09	0.10	0.04	0.04	< 0.5	< 0.5	500	1500	< 0.1	< 0.1	< 0.05	< 0.05
97AK04AS	0.08	0.12	0.03	0.04	< 0.5	< 0.5	300	880	< 0.1	0.1	< 0.05	< 0.05
97AK05AS	0.10	0.14	0.03	0.08	< 0.5	0.7	890	2400	< 0.1	0.4	< 0.05	< 0.05
97AK06AS	0.16	0.17	0.31	0.66	0.6	1	410	830	0.1	0.2	< 0.05	< 0.05
97AK06ASX	0.15	0.14	0.06	0.08	< 0.5	0.7	260	810	< 0.1	0.1	< 0.05	< 0.05
97AK07AS	0.10	0.09	0.08	0.24	< 0.5	< 0.5	530	990	< 0.1	0.1	< 0.05	< 0.05
97AK08AS	0.08	0.07	0.07	0.12	< 0.5	< 0.5	1500	2400	0.2	0.1	< 0.05	< 0.05
97AK09AS	0.15	0.11	0.99	0.27	2	1	680	1300	0.2	< 0.1	< 0.05	< 0.05
97AK0AAS	0.09	0.09	0.08	0.12	< 0.5	< 0.5	270	420	< 0.1	< 0.1	< 0.05	< 0.05
97AK10AS	0.06	0.06	0.05	0.05	< 0.5	< 0.5	620	2600	0.1	< 0.1	< 0.05	< 0.05
97AK11AS	0.16	0.04	2.85	0.37	2	< 0.5	1200	3200	0.7	0.3	< 0.05	< 0.05
97AK11ASX	0.07	0.04	0.29	0.10	0.6	< 0.5	770	2800	0.1	0.1	< 0.05	< 0.05
Grayleaf Willow (<i>Salix gauca</i>)												
97AK01SG	0.06	0.03	0.49	0.18	1	0.9	440	690	< 0.1	< 0.1	< 0.05	< 0.05
97AK01SGX	0.04	0.02	0.05	0.11	< 0.5	0.7	210	580	< 0.1	< 0.1	< 0.05	< 0.05
97AK02SG	0.04	< 0.02	0.05	0.07	< 0.5	0.8	890	1700	< 0.1	< 0.1	< 0.05	< 0.05
97AK02SGX	0.05	0.03	0.25	0.11	0.8	< 0.5	620	1400	< 0.1	< 0.1	< 0.05	< 0.05
97AK03SG	0.06	0.02	0.05	0.03	< 0.5	0.6	130	1600	< 0.1	< 0.1	< 0.05	< 0.05
97AK04SG	0.06	0.02	0.02	0.08	0.8	0.7	200	420	< 0.1	< 0.1	< 0.05	< 0.05
97AK05SG	0.04	0.02	0.03	0.09	< 0.5	< 0.5	110	1800	< 0.1	< 0.1	< 0.05	< 0.05
97AK06SG	< 0.02	0.03	0.03	0.11	< 0.5	< 0.5	100	1600	< 0.1	< 0.1	< 0.05	< 0.05
97AK06SGX	< 0.02	0.04	0.02	0.39	< 0.5	2	130	830	< 0.1	0.2	< 0.05	< 0.05
97AK07SG	0.03	0.11	0.08	0.6	0.7	370	190	< 0.1	< 0.1	< 0.05	< 0.05	
97AK08SG	0.06	0.02	0.03	0.12	< 0.5	< 0.5	490	180	< 0.1	< 0.1	< 0.05	< 0.05
97AK09SG	0.07	0.02	0.04	0.05	< 0.5	< 0.5	610	460	< 0.1	< 0.1	< 0.05	< 0.05
97AK0AAG	0.04	< 0.02	0.04	0.05	< 0.5	< 0.5	170	480	< 0.1	< 0.1	< 0.05	< 0.05
97AK10SG	0.04	0.03	0.04	0.06	< 0.5	< 0.5	470	400	< 0.1	< 0.1	< 0.05	< 0.05
97AK11SG	0.03	0.03	0.04	0.10	< 0.5	< 0.5	580	1400	< 0.1	< 0.1	< 0.05	< 0.05
97AK11SGX	0.03	0.03	0.03	0.18	< 0.5	0.6	240	550	< 0.1	< 0.1	< 0.05	< 0.05

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples, Fortymile River watershed, Alaska (continued).

Field Number	Leaf Ca, %	Twig Ca, %	Leaf Cd, ppm	Twig Cd, ppm	Leaf Ce, ppm	Twig Ce, ppm	Green alder (<i>Alnus crispa</i>)		Grayleaf Willow (<i>Salix glauca</i>)		
							Leaf Co, ppm	Twig Co, ppm	Leaf Cr, ppm	Twig Cr, ppm	
97AK01AS	13	34	0.4	0.4	1.9	1.0	2.3	2.1	4	2	1.4
97AK01ASX	16	34	0.4	0.6	0.7	1.4	2.2	3.3	2	2	2.2
97AK02AS	16	40	0.5	0.5	2.0	2.5	5.6	9.8	<1	<1	4.5
97AK02ASX	20	42	0.8	0.3	2.6	2.3	3.4	5.1	2	1	4.7
97AK03AS	13	34	0.6	0.8	0.8	0.8	4.3	5.2	1	1	1.6
97AK04AS	14	20	0.2	0.4	0.5	0.5	3.0	3.2	<1	1	3.4
97AK05AS	15	36	0.5	1.4	1.2	2.6	2.4	7.4	<1	<1	1.5
97AK06AS	17	33	0.5	0.5	4.2	14	6.2	11	4	5	3.4
97AK06ASX	15	36	0.4	0.5	1	1.8	7.4	9.7	<1	<1	2.2
97AK07AS	17	41	0.2	0.2	3.3	11	2.6	5.0	2	3	1.9
97AK08AS	18	38	1.1	1.0	1.4	2.2	7.2	12	<1	<1	5.1
97AK09AS	13	20	1.0	0.7	16	8.2	9.7	7.8	16	4	0.7
97AK0AAS	19	31	0.5	0.3	1.0	0.9	1.7	1.8	3	4	1.6
97AK10AS	13	31	0.8	0.5	1.3	1.3	2.5	4.1	<1	<1	2.8
97AK11AS	12	34	1.0	0.5	35	7.2	11	5.5	30	2	3.6
97AK11ASX	14	35	0.5	0.3	5.3	2.3	3.5	3.1	3	<1	2.0
97AK01SG	17	34	9.6	10	5.7	2.2	5.2	3.0	10	5	2.5
97AK01SGX	13	30	8.4	7.1	0.6	1.2	5.3	3.8	2	4	0.9
97AK02SG	15	27	26	17	1.4	1.4	24	10	<1	<1	0.3
97AK02SGX	14	20	24	19	4.7	2.5	10	6.4	4	2	0.4
97AK03SG	11	21	19	30	0.5	0.6	5.8	6.6	<1	<1	1.0
97AK04SG	13	34	22	12	0.2	0.7	3.2	6.5	<1	1	0.3
97AK05SG	12	19	28	33	0.2	1.4	6.3	15	<1	<1	0.3
97AK06SG	15	27	6.4	23	0.2	1.5	5.0	4.0	<1	6	0.3
97AK06SGX	16	28	14	12	0.2	11	12	8.0	<1	4	0.2
97AK07SG	15	20	16	8.4	1.7	0.6	8.5	6.2	2	2	0.6
97AK08SG	12	32	26	4.8	0.4	0.8	5.3	3.2	<1	2	0.2
97AK09SG	11	19	32	37	0.5	0.4	20	4.4	<1	<1	0.6
97AK0AASG	14	17	13	18	0.4	0.4	9.6	2.6	<1	<1	0.8
97AK10SG	11	16	29	16	0.5	0.4	10	3.4	1	2	0.7
97AK11SG	10	19	18	15	0.8	1.4	14	11	<1	<1	0.4
97AK11SGX	15	29	8.2	6.1	0.4	1.9	8.4	5.6	<1	2	0.2

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples, Fortymile River watershed, Alaska (continued).

Field Number	Leaf Cu, ppm	Twig Cu, ppm	Leaf Fe, %	Twig Fe, %	Leaf Ga, ppm	Twig Ga, ppm	Leaf Ge, ppm	Twig Ge, ppm	Leaf In, ppm	Twig In, ppm	Leaf K, %	Twig K, %
Green alder (<i>Alnus crispa</i>)												
97AK01AS	200	150	0.25	0.18	0.7	0.3	<0.1	<0.1	<0.1	<0.1	>8	12
97AK01ASX	250	190	0.20	0.20	0.5	0.4	<0.1	<0.1	<0.1	<0.1	>8	--
97AK02AS	120	140	0.24	0.17	0.5	0.3	<0.1	<0.1	<0.1	<0.1	>8	7.8
97AK02ASX	140	110	0.26	0.14	0.5	0.2	<0.1	<0.1	<0.1	<0.1	>8	6.2
97AK03AS	270	260	0.24	0.20	0.5	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK04AS	190	220	0.21	0.18	0.5	0.4	<0.1	<0.1	<0.1	<0.1	>8	--
97AK05AS	230	260	0.18	0.20	0.4	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK06AS	180	200	0.46	0.57	1.1	1.6	<0.1	0.2	<0.1	<0.1	>8	9.8
97AK06ASX	170	190	0.40	0.41	0.6	0.3	<0.1	<0.1	<0.1	<0.1	>8	15
97AK07AS	190	130	0.31	0.29	0.6	0.6	<0.1	0.1	<0.1	<0.1	>8	4.8
97AK08AS	220	180	0.23	0.17	0.5	0.3	<0.1	<0.1	<0.1	<0.1	>8	5.6
97AK09AS	180	210	1.1	0.36	2.6	0.8	0.2	<0.1	<0.1	<0.1	>8	--
97AK09ASX	290	190	0.24	0.18	0.7	0.3	<0.1	<0.1	<0.1	<0.1	>8	12
97AK10AS	130	120	0.22	0.13	0.5	0.3	<0.1	<0.1	<0.1	<0.1	>8	11
97AK11AS	130	140	2.5	0.27	6.4	0.7	0.6	<0.1	<0.1	<0.1	>8	8.1
97AK11ASX	130	140	0.37	0.17	0.8	0.3	<0.1	<0.1	<0.1	<0.1	>8	12
Grayleaf Willow (<i>Salix glauca</i>)												
97AK01SG	100	93	0.45	0.22	1.3	0.5	<0.1	<0.1	<0.1	<0.1	>8	12
97AK01SGX	110	81	0.16	0.16	0.5	0.4	<0.1	<0.1	<0.1	<0.1	>8	13
97AK02SG	120	190	0.13	0.11	0.4	0.2	<0.1	<0.1	<0.1	<0.1	>8	--
97AK02SGX	120	260	0.31	0.17	0.9	0.5	<0.1	<0.1	<0.1	<0.1	>8	--
97AK03SG	160	150	0.15	0.10	0.5	0.2	<0.1	<0.1	<0.1	<0.1	>8	--
97AK04SG	120	110	0.12	0.15	0.4	0.2	<0.1	<0.1	<0.1	<0.1	>8	12
97AK05SG	130	130	0.14	0.10	0.4	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK06SG	130	110	0.13	0.15	0.4	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK06SGX	150	170	0.14	0.32	0.5	0.9	<0.1	<0.1	<0.1	<0.1	>8	--
97AK07SG	140	90	0.24	0.11	0.5	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK08SG	130	88	0.12	0.14	0.3	0.3	<0.1	<0.1	<0.1	<0.1	>8	14
97AK09SG	100	160	0.12	0.10	0.4	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK09SGX	80	170	0.13	0.09	0.3	0.2	<0.1	<0.1	<0.1	<0.1	>8	--
97AK10SG	110	180	0.13	0.10	0.3	0.3	<0.1	<0.1	<0.1	<0.1	>8	--
97AK11SG	120	150	0.15	0.14	0.7	0.4	<0.1	<0.1	<0.1	<0.1	>8	--
97AK11SGX	130	190	0.15	0.20	0.4	0.6	<0.1	<0.1	<0.1	<0.1	>8	--

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples, Fortymile River watershed, Alaska (continued).

Field Number	Leaf La, ppm	Twig La, ppm	Leaf Li, ppm	Twig Li, ppm	Leaf Mg, %	Twig Mg, %	Leaf Mn, ppm	Twig Mn, ppm	Leaf Mo, ppm	Twig Mo, ppm	Leaf Na, %	Twig Na, %
Green alder (<i>Alnus crispa</i>)												
97AK01AS	1.1	0.6	9.2	20	2.2	1.3	1400	1400	6.8	17	0.08	0.16
97AK01ASX	0.4	0.8	22	20	2.8	1.4	1800	1100	4.2	4.2	0.07	0.12
97AK02AS	1.6	2.1	17	28	5.2	2.5	8700	6400	2.0	8.5	0.13	0.17
97AK02ASX	2.2	2.0	15	24	6.3	2.1	850	450	1.7	3.0	0.11	0.16
97AK03AS	0.7	0.8	16	20	2.7	1.7	1800	1400	5.5	7.8	0.09	0.17
97AK04AS	0.4	0.4	19	32	3.5	2.7	2000	2700	6.8	28	0.07	0.16
97AK05AS	1.0	2.1	9.9	36	3.2	2.4	2500	1100	3.7	5.2	0.09	0.25
97AK06AS	2.8	9.2	18	35	3.2	2.1	3800	980	5.8	2.6	0.14	0.42
97AK06ASX	0.5	1.6	14	29	3.3	2.1	3900	1600	10	6.1	0.09	0.26
97AK07AS	2.0	9.5	16	21	3.2	1.2	1800	1100	11	12	0.15	0.19
97AK08AS	1.3	1.9	30	27	5.1	2.0	2000	3500	<0.1	0.8	0.08	0.12
97AK09AS	10	5.1	12	26	4.1	2.9	2700	2500	12	20	0.33	0.38
97AK0AAS	0.6	0.5	25	12	3.7	2.0	1400	1200	12	29	0.06	0.09
97AK10AS	0.9	1.1	13	48	3.6	2.1	4300	5100	0.2	2.6	0.08	0.25
97AK11AS	18	4.9	21	30	3.7	2.1	7500	970	1.2	0.2	0.82	0.27
97AK11ASX	3.8	1.8	12	29	4.0	3.1	1100	2000	<0.1	0.7	0.15	0.21
Grayleaf Willow (<i>Salix glauca</i>)												
97AK01SG	3.2	1.2	30	15	2.7	1.5	1200	1300	1.8	0.9	0.04	0.12
97AK01SGX	0.3	0.7	20	16	3.3	2.0	920	1300	2.0	1.0	0.11	0.16
97AK02SG	1.3	1.2	10	25	3.0	2.2	540	520	1.3	1.4	0.05	0.09
97AK02SGX	2.8	1.7	10	17	3.1	2.5	500	460	1.00	0.6	0.05	0.12
97AK03SG	0.3	0.5	16	22	3.8	2.7	1600	1500	4.8	2.7	0.06	0.23
97AK04SG	0.1	0.4	12	17	3.5	2.0	1100	1000	10	0.6	0.04	0.28
97AK05SG	0.1	1.2	41	25	4.1	3.0	2500	1600	3.1	0.2	0.04	0.17
97AK06SG	0.1	1.0	6.8	18	2.6	2.6	740	1000	3.0	0.1	0.05	0.17
97AK06SGX	<0.1	7.8	8.0	22	3.4	3.3	1000	1300	4.2	0.4	0.06	0.37
97AK07SG	1.2	0.2	11	21	4.5	2.2	800	1200	0.6	1.9	0.16	0.18
97AK08SG	0.3	0.4	6.5	20	3.7	1.8	1000	1100	0.3	1.1	0.08	0.18
97AK09SG	0.5	0.3	8.1	21	3.7	3.1	1000	2100	0.2	0.7	0.11	0.12
97AK0AASG	0.2	0.2	6.9	20	3.3	3.1	1500	1500	1.5	4.6	0.06	0.16
97AK10SG	0.5	0.2	22	27	3.2	2.4	1900	2100	5.8	3.0	0.07	0.15
97AK11SG	0.6	1.0	8.5	21	3.7	2.9	1500	1700	0.7	0.3	0.08	0.16
97AK11SGX	0.2	1.0	5.7	10	3.4	2.4	260	1500	3.3	2.6	0.07	0.18

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples,
Fortymile River watershed, Alaska (continued).

Field Number	Nb, ppm	Leaf	Twig	Leaf Ni, ppm	Twig Ni, ppm	Green alder (<i>Alnus crispa</i>)			Leaf Pb, ppm	Twig Pb, ppm	Leaf Rb, ppm	Twig Rb, ppm	Leaf Sb, ppm	Twig Sb, ppm
						P, %	Pb, ppm	Rb, ppm						
97AK01AS	< 0.1	0.5	25	13	3.2	3.1	1.6	220	1.8	1.6	220	120	0.1	< 0.1
97AK01ASX	< 0.1	0.3	32	18	3.7	2.8	1.6	160	4.3	4.3	160	100	0.2	0.1
97AK02AS	< 0.1	0.1	56	54	3.4	2.6	1.1	360	2.0	2.0	360	150	3.6	0.2
97AK02ASX	< 0.1	0.1	53	34	3.9	1.5	1.7	540	2.6	2.6	540	150	0.2	< 0.1
97AK03AS	< 0.1	0.1	110	61	4.8	4.1	2.0	190	3.0	3.0	190	140	< 0.1	< 0.1
97AK04AS	< 0.1	0.1	59	31	4.7	6.4	0.8	400	1.3	1.3	400	420	< 0.1	< 0.1
97AK05AS	< 0.1	< 0.1	87	56	3.9	3.4	1.2	200	3.2	3.2	200	140	< 0.1	< 0.1
97AK06AS	0.2	0.3	42	32	3.9	2.9	2.0	230	3.4	3.4	230	180	< 0.1	< 0.1
97AK06ASX	< 0.1	< 0.1	40	26	4.9	4.4	1.1	240	1.8	1.8	240	220	< 0.1	< 0.1
97AK07AS	< 0.1	< 0.1	48	39	4.0	1.6	1.5	430	1.8	1.8	430	150	< 0.1	< 0.1
97AK08AS	< 0.1	< 0.1	120	85	4.5	2.2	0.8	370	2.2	2.2	370	120	< 0.1	< 0.1
97AK09AS	1.1	0.2	46	31	3.4	4.3	5.0	180	2.9	2.9	180	130	0.3	< 0.1
97AK0AAS	< 0.1	0.1	30	13	4.4	3.1	1.6	220	1.7	1.7	220	120	< 0.1	< 0.1
97AK10AS	< 0.1	< 0.1	48	41	4.4	3.1	0.7	610	1.2	1.2	610	310	< 0.1	< 0.1
97AK11AS	4.2	< 0.1	62	70	2.6	1.9	6.8	350	2.2	2.2	350	250	0.6	< 0.1
97AK11ASX	< 0.1	< 0.1	38	35	3.5	2.9	1.5	280	1.2	1.2	280	240	< 0.1	< 0.1
Grayleaf Willow (<i>Salix glauca</i>)														
97AK01SG	0.2	< 0.1	23	19	2.7	1.9	2.0	210	2.2	2.2	210	130	0.2	0.1
97AK01SGX	< 0.1	< 0.1	31	18	4.5	2.6	1.2	190	2.4	2.4	190	130	0.1	0.1
97AK02SG	< 0.1	< 0.1	33	25	3.3	2.3	0.8	250	1.3	1.3	250	230	5.5	0.7
97AK02SGX	0.3	0.8	31	38	3.8	3.9	1.7	180	1.3	1.3	180	190	1.0	0.2
97AK03SG	< 0.1	< 0.1	62	20	4.4	2.5	0.8	340	0.7	0.7	340	260	< 0.1	< 0.1
97AK04SG	< 0.1	< 0.1	40	15	3.7	2.2	0.4	96	1.8	1.8	96	140	< 0.1	< 0.1
97AK05SG	< 0.1	< 0.1	37	33	3.7	3.6	0.8	85	1.7	1.7	85	260	< 0.1	< 0.1
97AK06SG	< 0.1	< 0.1	44	33	3.8	2.4	0.8	210	2.1	2.1	210	75	< 0.1	< 0.1
97AK06SGX	< 0.1	< 0.1	71	34	4.3	3.0	0.6	140	3.0	3.0	140	350	< 0.1	< 0.1
97AK07SG	< 0.1	< 0.1	48	41	3.0	3.1	1.5	340	1.1	1.1	340	100	< 0.1	< 0.1
97AK08SG	< 0.1	< 0.1	57	24	2.7	2.9	0.5	79	2.8	2.8	79	160	< 0.1	< 0.1
97AK09SG	< 0.1	< 0.1	47	31	4.1	3.5	0.8	250	1.3	1.3	250	86	< 0.1	< 0.1
97AK0AASG	< 0.1	< 0.1	19	33	2.3	3.8	0.6	220	0.7	0.7	220	130	< 0.1	< 0.1
97AK10SG	< 0.1	< 0.1	17	35	1.9	3.2	0.8	390	0.9	0.9	390	250	< 0.1	< 0.1
97AK11SG	< 0.1	< 0.1	41	29	3.4	3.2	0.8	250	1.6	1.6	250	260	< 0.1	< 0.1
97AK11SGX	< 0.1	< 0.1	17	14	2.5	3.2	0.8	140	2.4	2.4	140	150	< 0.1	< 0.1

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples, Fortymile River watershed, Alaska (continued).

Field Number	Sc, ppm	Twig Sc, ppm	Leaf Sc, ppm	Green alder (<i>Alnus crispa</i>)						Grayleaf Willow (<i>Salix glauca</i>)					
				Leaf Sr, ppm	Twig Sr, ppm	Leaf Th, ppm	Twig Th, ppm	Leaf Tl, ppm	Twig Tl, ppm	Leaf U, ppm	Twig U, ppm	Leaf V, ppm	Twig V, ppm	Leaf V, ppm	Twig V, ppm
97AK01AS	< 0.5	< 0.5	250	610	0.2	< 0.05	< 0.1	< 0.1	< 0.1	0.07	< 0.05	8	4	4	4
97AK01ASX	< 0.5	< 0.5	280	600	0.09	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	0.05	5	4	4	4
97AK02AS	< 0.5	< 0.5	780	1600	0.06	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	4	4	4	4
97AK02ASX	< 0.5	< 0.5	1000	1900	0.1	< 0.05	< 0.1	< 0.1	< 0.1	0.06	0.07	5	4	4	4
97AK03AS	< 0.5	< 0.5	230	600	0.08	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	4	4	4	4
97AK04AS	< 0.5	< 0.5	540	960	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	4	4	4	4
97AK05AS	< 0.5	< 0.5	670	1500	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	4	4	5	5
97AK06AS	< 0.5	1	640	1200	0.57	0.75	< 0.1	< 0.1	< 0.1	0.57	2.4	8	8	8	8
97AK06ASX	< 0.5	< 0.5	570	1300	0.1	< 0.05	< 0.1	< 0.1	< 0.1	0.08	0.66	5	4	4	4
97AK07AS	< 0.5	< 0.5	620	1300	0.2	0.2	< 0.1	< 0.1	< 0.1	2.2	11	6	6	6	6
97AK08AS	< 0.5	< 0.5	720	1200	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	4	4	4
97AK09AS	3	< 0.5	520	880	1.4	0.3	< 0.1	< 0.1	< 0.1	0.92	0.3	24	7	7	7
97AK09AAS	< 0.5	< 0.5	460	830	0.2	< 0.05	< 0.1	< 0.1	< 0.1	0.05	0.07	8	5	5	5
97AK10AS	< 0.5	< 0.5	370	780	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	4	4	4
97AK11AS	8.1	< 0.5	540	1000	3.4	< 0.05	< 0.1	< 0.1	< 0.1	1.2	0.2	75	6	6	6
97AK11ASX	< 0.5	< 0.5	460	1000	0.58	< 0.05	< 0.1	< 0.1	< 0.1	0.2	0.05	6	5	5	5
97AK01SG	0.8	< 0.5	350	460	0.75	0.06	< 0.1	< 0.1	< 0.1	0.2	0.09	15	6	6	6
97AK01SGX	< 0.5	< 0.5	220	380	0.2	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	0.05	6	6	6	6
97AK02SG	< 0.5	< 0.5	830	810	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	6	5	5	5
97AK02SGX	< 0.5	< 0.5	840	940	0.4	0.2	< 0.1	< 0.1	< 0.1	0.3	0.1	11	6	6	6
97AK03SG	< 0.5	< 0.5	190	690	0.2	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	6	5	5	5
97AK04SG	< 0.5	< 0.5	600	620	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	0.07	5	5	5	5
97AK05SG	< 0.5	< 0.5	370	720	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	4	4	4
97AK06SG	< 0.5	< 0.5	1100	710	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	5	5	5
97AK06SGX	< 0.5	< 0.5	1400	800	< 0.05	0.2	< 0.1	< 0.1	< 0.1	< 0.05	4.7	5	6	6	6
97AK07SG	< 0.5	< 0.5	590	1400	0.1	< 0.05	< 0.1	< 0.1	< 0.1	0.68	< 0.05	6	5	5	5
97AK08SG	< 0.5	< 0.5	400	1400	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	5	5	5
97AK09SG	< 0.5	< 0.5	450	700	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	0.07	5	4	4	4
97AK10ASG	< 0.5	< 0.5	370	790	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	4	4	4
97AK10SG	< 0.5	< 0.5	390	320	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	5	4	4	4
97AK11SG	< 0.5	< 0.5	480	690	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	7	5	5	5
97AK11SGX	< 0.5	< 0.5	290	410	< 0.05	< 0.05	< 0.1	< 0.1	< 0.1	< 0.05	0.07	5	5	5	5

Table 18. Chemical results as measured for all *Alnus crispa* (green alder) and *Salix glauca* (grayleaf willow) samples, Fortymile River watershed, Alaska (continued).

Field Number	Leaf Y, ppm	Twig Y, ppm	Leaf Zn, ppm	Twig Zn, ppm	Green alder (<i>Alnus crispa</i>)		Dry-Weight Basis		Grayleaf Willow (<i>Salix glauca</i>)	
					Ash, %	Leaf Hg, ppm	Leaf Hg, ppm	Twig Hg, ppm	Leaf Total S, %	Twig Total S, %
97AK01AS	0.9	0.5	590	1200	4.28	6.46	0.02	<0.02	0.27	0.09
97AK01ASX	0.3	0.6	810	2500	3.77	6.73	0.04	<0.02	0.26	0.09
97AK02AS	0.9	0.9	300	670	4.28	5.98	0.04	<0.02	0.23	0.08
97AK02ASX	1.1	1.0	430	560	5.21	5.24	0.02	<0.02	0.19	0.08
97AK03AS	0.3	0.4	580	1200	3.81	6.70	0.02	<0.02	0.40	0.11
97AK04AS	0.2	0.2	700	1200	2.91	5.26	0.02	<0.02	0.26	0.11
97AK05AS	0.6	1.1	500	1500	3.82	6.44	<0.02	<0.02	0.26	0.10
97AK06AS	3.1	11	460	1200	3.8	7.43	<0.02	<0.02	0.26	0.10
97AK06ASX	0.5	1.8	500	910	3.44	6.19	<0.02	<0.02	0.32	0.10
97AK07AS	1.2	6.7	590	1100	5.63	5.71	<0.02	<0.02	0.30	0.09
97AK08AS	1.3	1.2	540	1200	3.6	4.97	<0.02	<0.02	0.25	0.07
97AK09AS	8.4	3.2	550	1300	3.01	6.59	0.02	<0.02	0.29	0.10
97AK0AAS	0.5	0.5	840	1200	3.32	6.49	<0.02	<0.02	0.27	0.10
97AK10AS	0.6	0.5	530	940	3.04	4.70	<0.02	<0.02	0.23	0.07
97AK11AS	16	3.2	390	660	4	10.47	0.02	0.02	0.28	0.08
97AK11ASX	2.6	0.9	460	790	3.22	6.30	0.02	<0.02	0.26	0.08
Grayleaf Willow (<i>Salix glauca</i>)										
97AK01SG	2.7	1.0	1800	3200	4.84	9.80	0.02	0.02	0.42	0.12
97AK01SGX	0.2	0.5	2500	4400	3.76	7.04	0.02	0.02	0.34	0.10
97AK02SG	0.4	0.4	1200	1500	4.72	7.23	0.02	<0.02	0.29	0.09
97AK02SGX	1.9	0.9	1300	2400	3.53	6.16	0.02	<0.02	0.21	0.09
97AK03SG	0.3	0.3	1400	4100	3.37	8.48	0.03	<0.02	0.51	0.10
97AK04SG	0.1	0.3	3400	4700	3.71	7.96	0.02	<0.02	0.49	0.23
97AK05SG	0.1	0.6	1900	3600	2.57	5.47	<0.02	<0.02	0.44	0.11
97AK06SG	0.1	0.7	1900	5100	4.35	7.49	0.03	<0.02	0.38	0.10
97AK06SGX	<0.1	6.3	1400	5100	4.38	8.32	0.02	<0.02	0.50	0.16
97AK07SG	1.3	0.3	2000	2600	4.32	6.49	0.02	<0.02	0.34	0.13
97AK08SG	0.2	0.4	2600	3800	3.57	6.38	0.02	<0.02	0.30	0.09
97AK09SG	0.3	0.2	1300	4700	3.7	6.26	0.03	0.02	0.35	0.14
97AK09SGX	0.1	0.2	2000	6400	4.24	7.27	0.03	<0.02	0.52	0.09
97AK10SG	0.3	<0.1	2200	3100	4.56	8.38	0.02	<0.02	0.63	0.15
97AK11SG	0.4	0.6	1800	4200	3.63	6.31	0.02	<0.02	0.28	0.09
97AK11SGX	0.2	0.8	1700	3400	3.59	5.88	0.02	<0.02	0.25	0.08

Table 19 Chemical results as measured for all *Hylocomium splendens* (feather moss) samples, Forty-mile River watershed, Alaska.
 (All analyses are on an ash weight basis unless noted.)

Field Number	Ag, ppm	Al, %	As, ppm	Ba, ppm	Be, ppm	Bi, ppm	Ca, %	Cd, ppm	Ce, ppm	Co, ppm	Cr, ppm	Cs, ppm
97AK01HS	0.11	4.4	5.8	1900	0.6	0.1	17	3.9	26	11	45	22
97AK03HS	0.07	2.5	2	1200	0.3	0.1	19	2.8	14	5.7	11	1.2
97AK04HS	0.10	3.2	4	1400	0.5	0.1	21	2.7	22	7.8	19	2.1
97AK05HS	0.12	3.3	3	1700	0.5	0.2	21	2.0	19	6.1	16	1.1
97AK06HS	0.10	5.1	3	890	0.7	0.1	18	1.0	22	8.6	18	1.2
97AK07HS	0.13	4.9	3	1400	1.3	0.1	23	2.8	20	9.2	15	1.2
97AK08HS	0.19	6.0	4	1500	0.9	0.2	16	4.5	25	12	23	2.0
97AK09HS	0.13	2.6	3	2000	0.3	0.2	24	7.8	12	8.8	15	1.0
97AK10HS	0.12	5.8	5.0	1600	0.7	0.2	18	4.0	25	11	29	1.7
97AK11HS	0.36	3.8	4	2000	0.6	0.2	24	5.5	18	11	26	2.1
97AK12HS	0.47	10	18	2100	2.5	0.3	9.2	1.7	50	19	75	2.9
97AK13HS	0.24	8.3	4	1400	1.0	0.2	12	1.0	37	21	90	2.8

Field Number	Cu, ppm	Fe, %	Ga, ppm	Ge, ppm	In, ppm	K, %	La, ppm	Li, ppm	Mg, %	Mn, ppm	Mo, ppm	Na, %
97AK01HS	120	2.6	9.5	0.7	< 0.1	2.7	15	11	1.9	1600	2.8	1.2
97AK03HS	88	1.4	5.2	0.4	< 0.1	2.5	7.6	6.4	2.2	2000	6.4	0.83
97AK04HS	140	1.8	6.7	0.5	< 0.1	3.6	12	9.9	3.0	1600	4.1	1.1
97AK05HS	140	1.7	6.5	0.5	< 0.1	3.0	11	7.9	2.2	2400	5.0	1.2
97AK06HS	110	2.5	9.4	0.7	< 0.1	2.7	12	11	2.5	1500	3.1	1.8
97AK07HS	100	2.3	8.5	0.7	< 0.1	2.3	12	9.3	2.6	2700	7.8	1.5
97AK08HS	490	3.2	12	0.8	< 0.1	5.4	14	16	2.9	16000	3.2	2.3
97AK09HS	120	1.5	5.4	0.4	< 0.1	4.8	7.0	9.5	3.7	14000	1.7	1.0
97AK10HS	190	3.0	11	0.8	< 0.1	--	14	16	3.5	22000	5.8	2.1
97AK11HS	250	2.1	7.5	0.6	< 0.1	--	9.9	12	4.0	14000	4.6	1.4
97AK12HS	160	5.1	18	1.0	< 0.1	4.9	31	17	3.6	5200	3.2	2.3
97AK13HS	150	5.9	17	1.1	< 0.1	5.0	21	22	3.9	11000	2.2	2.2

Table 19 Chemical results as measured for all *Hylocomium splendens* (feather moss) samples, Fortymile River watershed, Alaska
 (continued).

Field Number	Nb, ppm	Ni, ppm	P, %	Pb, ppm	Rb, ppm	Sb, ppm	Sr, ppm	Th, ppm	Tl, ppm	U, ppm	V, ppm
97AK01HS	4.7	35	0.89	32	80	2.0	8.6	450	2.9	0.3	1.1
97AK03HS	2.3	12	0.91	13	46	0.5	4	460	1.5	0.1	0.60
97AK04HS	3.7	40	1.2	18	50	0.5	6.1	940	2.9	0.2	1.1
97AK05HS	3.0	19	0.97	19	36	0.5	5.5	910	1.8	0.1	20
97AK06HS	4.1	14	0.85	17	30	0.5	8.1	1200	2.0	0.2	0.85
97AK07HS	3.9	22	0.88	14	39	0.5	7.4	970	1.9	0.2	52
97AK08HS	4.8	34	1.6	26	68	0.7	9.9	550	2.6	0.2	1.2
97AK09HS	2.2	23	1.7	13	50	0.4	5.0	670	1.4	0.1	0.60
97AK10HS	4.7	24	2.0	28	50	1.0	10	530	2.8	0.2	1.0
97AK11HS	3.2	30	3.0	26	87	0.8	6.6	700	2.1	0.2	0.86
97AK12HS	10	37	1.1	29	120	6.5	20	400	7.5	0.4	2.2
97AK13HS	8.6	31	1.5	20	120	0.7	26	510	4.8	0.4	1.6

Dry-weight Basis

Field Number	Y, ppm	Zn, ppm	Total S, %	As, %	Hg, ppm
97AK01HS	16	810	0.05	5.06	0.08
97AK03HS	8.2	1100	0.07	6.47	0.05
97AK04HS	12	360	0.07	4.47	0.03
97AK05HS	13	680	0.07	4.58	0.06
97AK06HS	14	430	0.06	5.77	0.04
97AK07HS	20	400	0.06	5.38	0.04
97AK08HS	17	810	0.05	3.45	0.04
97AK09HS	7.7	930	0.06	4.77	0.06
97AK10HS	16	730	0.06	3.34	0.05
97AK11HS	12	1400	0.05	2.61	0.07
97AK12HS	26	340	0.04	5.42	0.04
97AK13HS	26	540	0.04	5.64	0.04